

# **NASA'S UNIVERSITY PROGRAM**

## **ACTIVE PROJECTS**

**FISCAL YEAR 1983**

**National Aeronautics and Space Administration  
Office of Procurement  
Procurement Management Division  
Washington, D. C. 20546**



# FOREWORD

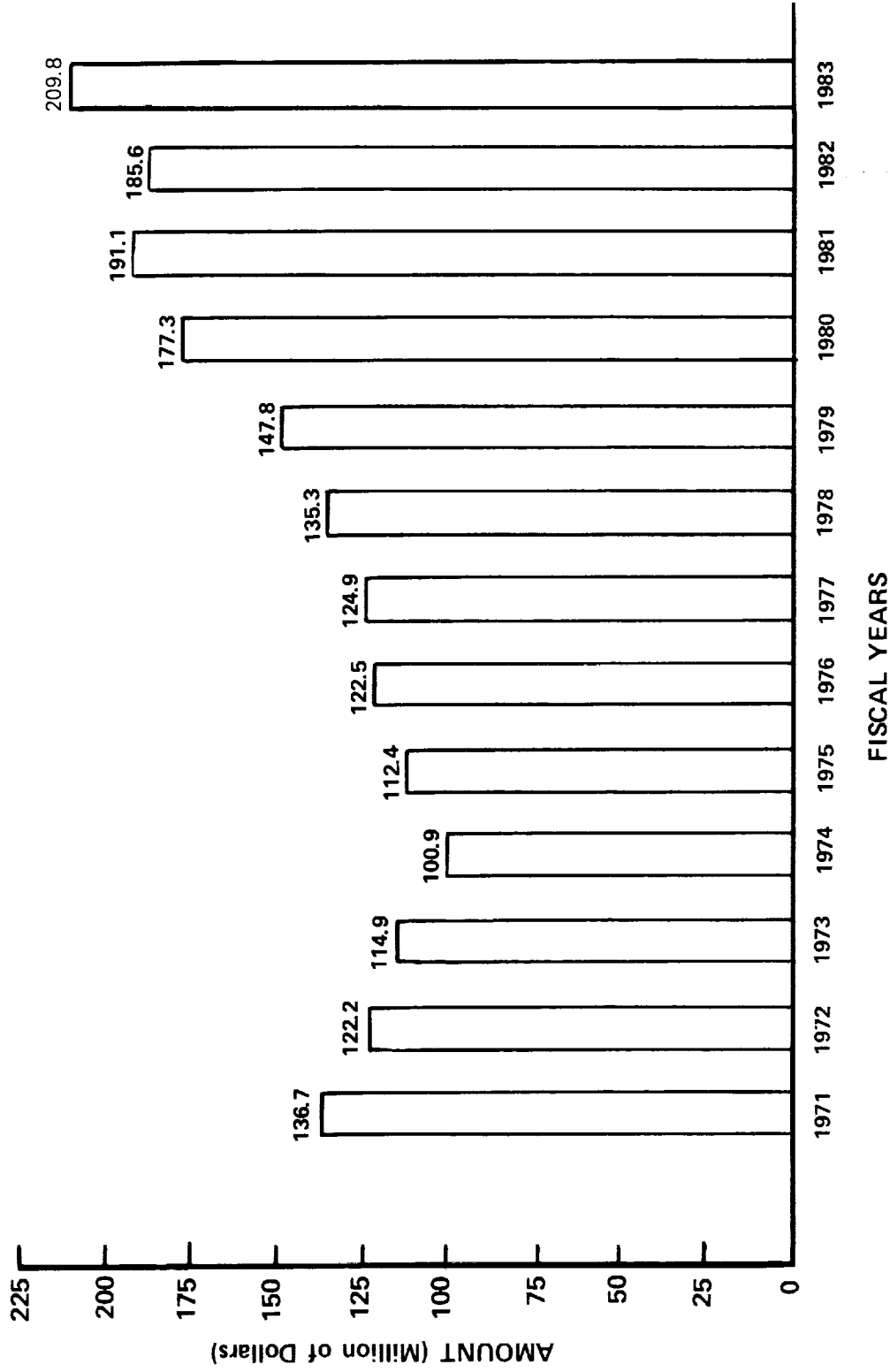
As basic policy NASA believes that colleges and universities should be encouraged to participate in the nation's space and aeronautics program to the maximum extent practicable. Indeed, universities are considered as partners with government and industry in the nation's aerospace program. NASA's objective is to have them bring their scientific, engineering, and social research competence to bear on aerospace problems and on the broader social, economic, and international implications of NASA's technical and scientific programs. It is expected that, in so doing, universities will strengthen both their research and their educational capabilities to contribute more effectively to the national well-being.

NASA Field Centers and certain Headquarters Program Offices provide funds for those R&D activities in universities which contribute to the mission needs of that particular NASA element. Although NASA has no predetermined amount of money to devote to university activities, the effort funded each year is substantial. (See the bar chart on the next page). This annual report is one means of documenting the NASA-university relationship, frequently denoted, collectively, as NASA's University Program.

The report was prepared by the Procurement Management Division, Office of Procurement, NASA Headquarters.

# NASA OBLIGATIONS TO UNIVERSITIES

FISCAL YEARS 1971 - 1983



NOTE: Excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

FY 1971 includes \$15.0M in awards to Draper Lab.

FY 1972 includes \$5.7M in awards to Draper Lab.

FY 1973 includes \$5.2M in awards to Draper Lab.

In FY 1974 Draper Lab status changed from "university" to "nonprofit".



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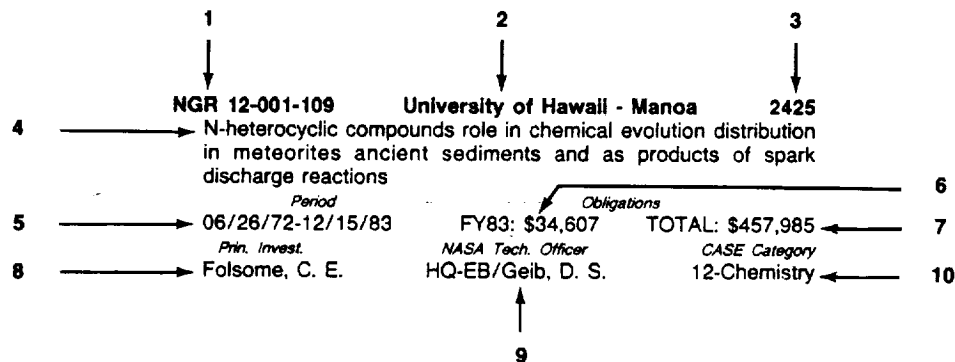
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# USER'S GUIDE

The University Program Report provides current information and related statistics for each grant/contract/cooperative agreement active during the report period. The following guidance is provided as an aid to the reader in readily locating material of interest and in optimizing the use of this document.

## I. Typical Citation



1. Agreement Number.\*
2. Institution Name.
3. Accession Number.
4. Brief work description.
5. Approximate period of performance.
6. Amount (if any) actually provided during the indicated fiscal year.
7. Total amount actually provided during the indicated period of performance.
8. Principal Investigator(s) at the educational institution.
9. NASA Technical Officer(s) and organizational location.
10. CASE Field of Science and Engineering code and name.

\*Uniquely identifies project. Prefixes denote type of instrument as follows:

Grants  
Cooperative Agreements  
Contracts  
Space Act Agreements

NAG, NAGW, NGF, NGT, NGL, NGR, NSG  
NCC, NCCW  
DEN, NAS, NASR, NASW, NSR  
NCA

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## II. NASA Installations

NASA installations are included in the citation as abbreviations (item 9). The following listing of installations will be useful to those desiring further information on specific projects.

<b>Abbrev.</b>	<b>Installation Name and Address</b>	<b>Telephone Number for Information</b>
ARC	Ames Research Center NASA Moffett Field, CA 94035	415/965-5000
DFRC	Dryden Flight Research Facility NASA P.O. Box 273 Edwards, CA 93523	805/258-3311
GSFC	Goddard Space Flight Center NASA Greenbelt, MD 20771	301/344-5121
JSC	Johnson Space Center NASA Houston, TX 77058	713/483-3111
KSC	Kennedy Space Center NASA Kennedy Space Center, FL 32899	305/867-7110
LARC	Langley Research Center NASA Hampton, VA 23665	804/827-1110
LERC	Lewis Research Center NASA 21000 Brookpark Road Cleveland, OH 44135	216/433-4000
MSFC	Marshall Space Flight Center NASA Marshall Space Flight Center, AL 35812	205/453-2121
NSTL	National Space Technology Laboratories NASA NSTL Station, MS 39529	601/688-2211
HQ	NASA Headquarters Washington, DC 20546	202/755-2320

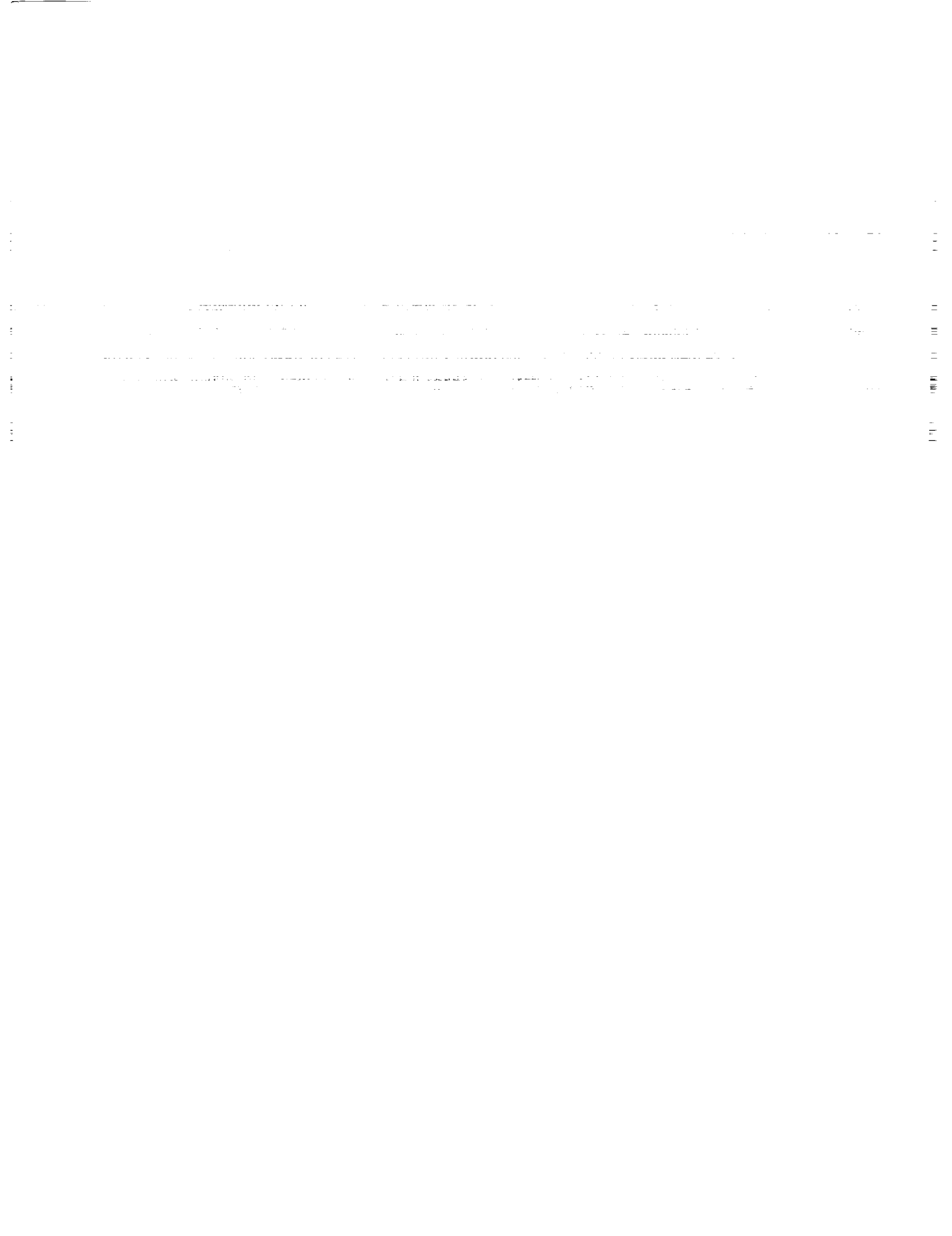
The abbreviation for NASA Headquarters, HQ, usually carries a suffix, for example HQ-EB, which denotes a particular office code and general area of responsibility. A full listing of the suffix letters and information on NASA's organizational structure may be found in the NASA Headquarters Telephone Directory. (The Directory is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.)

### **III. CASE Fields of Science and Engineering**

The National Science Foundation (NSF) operates a government-wide system (CASE) for collecting and analyzing data on support to colleges and universities. Participating agencies report annually to NSF which in turn issues *Support to Universities, Colleges and Selected Nonprofit Institutions*. The CASE Fields, used in the extensive tabulations contained in that document, form the only consistent classification system for government sponsored research. The fields are listed in full in the Appendix.

### **IV. Cross-Index**

The cross-indexed Appendix provides rapid access to all projects in a particular area of endeavor, as defined by the CASE Fields. This listing is also easily used to determine the institutions and principal investigators conducting NASA projects in a field. Entries are related to the citations (descriptions) by the accession number (item 3). The accession number has meaning only in this report; it is in no way permanently associated with nor does it uniquely identify a specific grant/contract/cooperative agreement anywhere except in the present report. Accession numbers are assigned sequentially to the citations, beginning with 1000. Thus, when an entry of interest is identified in the Appendix, the associated accession number allows ready location of the full description in the body of the report.



# NASA'S UNIVERSITY PROGRAM

## ALABAMA

**NAG 8-13 Alabama A&M University 1000**  
 Application of remotely sensed data to regional processing of  
 remotely sensed data water resources  
*Period Obligations*  
 06/26/81-06/25/84 FY83: TOTAL: \$116,196  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Montgomery, O. L. NSTL/Mooneyhan, D. W.  
 NSTL/Whitley, S. L. 39-Env Sci, NEC

**NAG 8-21 Alabama A&M University 1001**  
 Dellites/metallic measurement of liquid film thickness  
*Period Obligations*  
 07/18/83-07/17/84 FY83: \$42,163 TOTAL: \$42,163  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Chang, K. MSFC/Frazier, D. O. 12-Chemistry

**NAG13-2 Alabama A&M University 1002**  
 Effects of soil moisture and pertinent soil diagnostic properties  
 on thermal infrared and reflectance characteristics  
*Period Obligations*  
 01/01/83-12/31/83 FY83: \$30,000 TOTAL: \$30,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Coleman, T. L. NSTL/Stoner, E. R. 55-Agriculture Sci

**NAS 8-32945 Alabama A&M University 1003**  
 Solution growth of crystals in zero gravity experiment for materials  
 processing in space  
*Period Obligations*  
 03/05/78-12/31/85 FY83: \$64,000 TOTAL: \$564,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lal, R. B. MSFC/Moore, W. W., Jr.  
 MSFC/Fogle, V. 19-Phys Sci, NEC

**NAS 8-34591 Alabama A&M University 1004**  
 AXAF technology program support: The analysis of high  
 resolution X-ray scattering measurements  
*Period Obligations*  
 10/28/81-12/30/83 FY83: TOTAL: \$24,200  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Williams, A. C. MSFC/Weisskopf, M. C.  
 22-Computer Science  
 MSFC/Wyman, C. L.

**NGT 01-001-800 Alabama A&M University 1005**  
 Graduate student researchers program  
*Period Obligations*  
 04/01/82-03/31/84 FY83: \$8,040 TOTAL: \$22,720  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Williams, A. C. HQ-LB/Carter, C. H. 13-Physics

**NGT 01-001-801 Alabama A&M University 1006**  
 Graduate student researchers program  
*Period Obligations*  
 04/01/82-03/31/84 FY83: \$12,000 TOTAL: \$22,720  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 George, M. C. HQ-LB/Owens, F. C. 13-Physics

**NSG 8037 Alabama A&M University 1007**  
 Atmospheric effects on coherent laser systems  
*Period Obligations*  
 06/01/76-06/01/84 FY83: \$28,440 TOTAL: \$204,566  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Murty, S. R. MSFC/Bilbro, J. W. 45-Elec Engr  
 MSFC/Kent, M. I.

**NAS 8-34432 Athens State College 1008**  
 Vapor transport mechanisms  
*Period Obligations*  
 08/27/81-10/11/82 FY83: TOTAL: \$40,404  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Holland, L. R. MSFC/Fogle, V. 39-Env Sci, NEC  
 MSFC/Zwiener, J. M.

**NAS 8-33886 Auburn University 1009**  
 Research study: Solid rocket motor internal ballistic performance  
 variations  
*Period Obligations*  
 09/03/80-01/15/84 FY83: \$40,000 TOTAL: \$174,880  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Foster, W. A., Jr. MSFC/Shackelford, B. 31-Atmos Sci  
 Dforzini, R. H. MSFC/Aderbald, H.

**NAS 8-34130 Auburn University 1010**  
 Application of aerospace dynamic modeling techniques of civil  
 engineering structures  
*Period Obligations*  
 10/01/80-07/31/82 FY83: TOTAL: \$59,991  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Moore, R. K. MSFC/Slaby, J. A. 32-Geological Sci  
 Ramey, G. E. MSFC/Schock, R. W.  
 Yoo, C. J.

**NAS 8-35057 Auburn University 1011**  
 A theoretical investigation of solar plasma phenomena  
*Period Obligations*  
 04/01/83-03/31/84 FY83: \$5,000 TOTAL: \$5,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hinata, S. MSFC/Moore, R. L. 31-Atmos Sci  
 MSFC/Hildner, E.

**NAS10-10648 Auburn University 1012**  
 Hyperbolic fuel absorber/neutralizer  
*Period Obligations*  
 03/23/83-09/30/83 FY83: \$15,332 TOTAL: \$15,332  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Tatarchuk, B. J. KSC/Gerron, R. 43-Chem Engr  
 KSC/Aliberti, J.

**NGT 01-003-800 Auburn University 1013**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/16/83-06/15/84 FY83: \$14,000 TOTAL: \$14,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Sforzini, R. H. HQ-LB/Owens, F. C. 42-Astro Engr

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAG 1-172 Tuskegee Institute 1014**  
 Solution of nonlinear multivariable constrained systems using  
 gradient projection digital algorithm insensitive to initial state  
*Period Obligations*  
 05/01/81-04/30/83 FY83: TOTAL: \$70,658  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hargrove, A. LARC/Hogge, J. E.  
 29-Math/Cmputer, NEC  
 LARC/Shoosmith, J. N.

**NAG 3-76 Tuskegee Institute 1015**  
 Characterization of advanced electric propulsion systems  
*Period Obligations*  
 06/02/80-12/31/83 FY83: TOTAL: \$79,272  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ray, P. K. LERC/Kerslake, W. R. 19-Phys Sci, NEC

**NAG 3-459 Tuskegee Institute 1016**  
 1983 graduate and undergraduate aerospace fellowship pro-  
 gram  
*Period Obligations*  
 08/01/83-07/31/84 FY83: \$34,000 TOTAL: \$34,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Harris, V. G. LERC/Allen, H., Jr. 46-Mech Engr  
 Jeelani, S.

**NAG 8-20 Tuskegee Institute 1017**  
 Research support for the School of Engineering  
*Period Obligations*  
 07/20/83-07/19/84 FY83: \$374,450 TOTAL: \$374,450  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Harris, V. G. MSFC/Randall, J. L. 41-Aero Engr  
 Kumar, G. N. MSFC/Osburn, L.

**NAG10-6 Tuskegee Institute 1018**  
 Permeability of polymeric materials to condensable gases and  
 organic liquids  
*Period Obligations*  
 04/01/82-03/31/83 FY83: TOTAL: \$28,273  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Dillon, I. G. KSC/Bryan, C. J. 12-Chemistry

**NAG10-8 Tuskegee Institute 1019**  
 Permeability of polymeric materials to condensable gases and  
 organic liquids  
*Period Obligations*  
 07/15/83-07/15/84 FY83: \$39,428 TOTAL: \$39,428  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Dillon, I. G. KSC/Bryan, C. J. 12-Chemistry

**NCC 2-12 Tuskegee Institute 1020**  
 Morphometrics of cellular damage in mice receiving whole body  
 irradiation  
*Period Obligations*  
 08/01/79-07/31/84 FY83: \$55,000 TOTAL: \$240,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Sapp, W. J. ARC/Philpott, D. E. 54-Env Biology

**NGT 01-005-750 Tuskegee Institute 1021**  
 Training of undergraduate students in sciences and engineering  
*Period Obligations*  
 06/01/75-05/31/83 FY83: TOTAL: \$110,887  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Harris, G. HQ-LC/Pohly, J. G. 49-Engr, NEC  
 HQ-U/Jenkins, H. G.

**NSG 3295 Tuskegee Institute 1022**  
 An improved computer model for prediction of axial gas turbine  
 performance losses  
*Period Obligations*  
 08/01/79-12/29/83 FY83: TOTAL: \$170,677  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jenkins, R. M. LERC/Civinskas, K. C. 41-Aero Engr

**NAS 8-34728 University of Alabama - Birmingham 1023**  
 Extended range X-ray telescope: X-ray microscope design  
*Period Obligations*  
 01/29/82-06/28/82 FY83: TOTAL: \$11,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Shealy, D. L. MSFC/Hoover, R. B. 13-Physics  
 MSFC/Hildner, E.

**NAS 8-34962 University of Alabama - Birmingham 1024**  
 Effect of microstructure on weld HAZ cracking of Inconel 718  
*Period Obligations*  
 08/27/82-05/25/85 FY83: \$60,000 TOTAL: \$60,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Thompson, R. G. MSFC/Rowe, R. R. 47-Materials Engr  
 MSFC/Nunes, A. C.

**NGR 01-010-001 University of Alabama - Birmingham 1025**  
 Model for origin and coevolution of genetic code and the process  
 of protein synthesis  
*Period Obligations*  
 05/09/73-12/31/84 FY83: \$38,000 TOTAL: \$533,056  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lacey, J. C., Jr. HQ-EB/Devincenzi, D. L. 12-Chemistry  
 HQ-EB/Rambler, M. R.

**NAG 8-18 University of Alabama - Huntsville 1026**  
 Thermal ion dynamics experiment (TIDE): An investigation of  
 low-energy (0-100 eV) ions on the PPL and EML spacecraft or  
 the OPEN mission  
*Period Obligations*  
 08/30/82-10/29/83 FY83: TOTAL: \$10,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Horowitz, J. MSFC/Chappell, R. 11-Astronomy  
 Comfort, R. H.

**NAGW 9 University of Alabama - Huntsville 1027**  
 Dynamical behavior of a flaring loop (a two dimensional,  
 time-dependent MHD (magnetohydrodynamic) flux tube model  
*Period Obligations*  
 10/01/79-10/31/83 FY83: \$80,000 TOTAL: \$249,996  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wu, S. T. HQ-EZ/Chipman, E. G. 13-Physics



**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAGW 294 University of Alabama - Huntsville 1028**  
 Impulsive X-ray emission in solar flares  
*Period Obligations*  
 04/01/82-10/31/83 FY83: \$30,000 TOTAL: \$52,994  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Emslie, A. G. HQ-EZ/Chipman, E. G. 13-Physics

**NAS 8-31170 University of Alabama - Huntsville 1029**  
 Study of efficient low power diffractometer designs  
*Period Obligations*  
 01/15/75-08/30/83 FY83: TOTAL: \$220,483  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gregory, J. C. MSFC/Parnell, T. A. 13-Physics  
 MSFC/Fishman, G. J.

**NAS 8-32818 University of Alabama - Huntsville 1030**  
 Infrared telescope cryogenic system design and development  
*Period Obligations*  
 03/31/78-11/30/83 FY83: \$4,594 TOTAL: \$346,132  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hendricks, J. B. MSFC/Urban, E. W. 31-Atmos Sci  
 Karr, G. R. MSFC/Ladner, D. R.

**NAS 8-33096 University of Alabama - Huntsville 1031**  
 Design automation of digital systems  
*Period Obligations*  
 08/09/78-01/31/83 FY83: TOTAL: \$156,278  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Shiva, S. G. MSFC/Juergensen, K. 22-Computer Science

**NAS 8-33384 University of Alabama - Huntsville 1032**  
 Test facility for Helium-3 refrigerator research  
*Period Obligations*  
 05/31/79-01/31/83 FY83: TOTAL: \$72,322  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hendricks, J. B. MSFC/Urban, E. W. 12-Chemistry  
 MSFC/Tracey, R. S.

**NAS 8-33525 University of Alabama - Huntsville 1033**  
 Analysis and application of vector magnetic field data in predicting flares  
*Period Obligations*  
 03/03/80-09/02/82 FY83: TOTAL: \$64,507  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Krall, K. R. MSFC/Hagyard, D. J. 31-Atmos Sci  
 Wu, S. T. MSFC/Tandberghanssen, E.  
 Smith, J. B.

**NAS 8-33526 University of Alabama - Huntsville 1034**  
 Data analysis and modeling of ultraviolet spectrometer and polarimeter (UVSP) experiment and other related experiments for Solar Maximum Mission (SMM)  
*Period Obligations*  
 02/29/80-01/31/84 FY83: \$40,538 TOTAL: \$309,096  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wu, S. T. MSFC/Tandberghanssen, E. 31-Atmos Sci  
 MSFC/Bass, B.

**NAS 8-33542 University of Alabama - Huntsville 1035**  
 Advanced furnace development and scientific coordination activity  
*Period Obligations*  
 06/29/79-04/30/84 FY83: \$17,200 TOTAL: \$86,155  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hendricks, J. B. MSFC/Bass, B. G. 47-Materials Engr  
 MSFC/Horton, J. C.

**NAS 8-33726 University of Alabama - Huntsville 1036**  
 Study effects of internal wave on the neutral atmosphere  
*Period Obligations*  
 02/11/80-04/13/85 FY83: \$128,139 TOTAL: \$400,838  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hung, R. J. MSFC/West, G. W. 32-Geological Sci  
 MSFC/Smith, R. F.

**NAS 8-33731 University of Alabama - Huntsville 1037**  
 Containerless processing technology analysis  
*Period Obligations*  
 05/09/80-08/31/82 FY83: TOTAL: \$65,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Rush, J. E. MSFC/Theiss, J. M. 13-Physics  
 MSFC/Ethridge, E. C.

**NAS 8-33809 University of Alabama - Huntsville 1038**  
 Research related to the relativity Explorer  
*Period Obligations*  
 05/21/81-08/19/84 FY83: \$99,999 TOTAL: \$286,499  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Karr, G. R. MSFC/Decher, R. 31-Atmos Sci  
 Hendrix, J. B. MSFC/Urban, E. W.

**NAS 8-33810 University of Alabama - Huntsville 1039**  
 Directionally solidify superconducting materials  
*Period Obligations*  
 06/29/81-10/24/82 FY83: TOTAL: \$12,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Davis, J. MSFC/McClure, J. C. 47-Materials Engr  
 MSFC/Parr, R. A.

**NAS 8-33811 University of Alabama - Huntsville 1040**  
 Hydrogen embrittlement in Cu-Ni alloys  
*Period Obligations*  
 05/27/81-06/15/84 FY83: \$19,238 TOTAL: \$61,238  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Davis, J. H. MSFC/McClure, J. C. 47-Materials Engr  
 MSFC/Alter, W. A.

**NAS 8-33812 University of Alabama - Huntsville 1041**  
 Electrodeposition in microgravity  
*Period Obligations*  
 05/13/81-06/30/82 FY83: TOTAL: \$25,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Riley, C. MSFC/Owen, R. B. 31-Atmos Sci  
 Coble, H. D. MSFC/Bass, B. B.

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAS 8-33975 University of Alabama - Huntsville 1042**  
 High energy cosmic ray balloon flight investigations  
*Period Obligations*  
 06/13/80-06/12/83 FY83: TOTAL: \$99,688  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gregory, J. MSFC/Fishman, G. J. 13-Physics  
 MSFC/Farnell, T. A.

**NAS 8-33978 University of Alabama - Huntsville 1043**  
 New polymers for low-gravity purification of cells by partitioning  
*Period Obligations*  
 09/10/80-09/30/83 FY83: TOTAL: \$101,716  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Harris, J. M. MSFC/Fogle, V. 12-Chemistry  
 MSFC/Savage, W. H.

**NAS 8-33982 University of Alabama - Huntsville 1044**  
 Plasma and magnetospheric research  
*Period Obligations*  
 08/27/80-01/31/84 FY83: \$226,611 TOTAL: \$627,110  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Comfort, R. H. MSFC/Chappell, C. R. 13-Physics  
 Horowitz, J. L. MSFC/Fields, S. F.

**NAS 8-34137 University of Alabama - Huntsville 1045**  
 Burst and transient source experiment (BATSE) for the gamma-ray observatory  
*Period Obligations*  
 02/05/81-08/31/84 FY83: \$50,000 TOTAL: \$157,985  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Paciesas, W. S. MSFC/Fishman, G. J. 31-Atmos Sci  
 MSFC/Parnell, T. A.

**NAS 8-34187 University of Alabama - Huntsville 1046**  
 Geostationary platform workshop  
*Period Obligations*  
 09/02/80-07/31/82 FY83: TOTAL: \$43,662  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Carter, E. MSFC/Carey, W. T. 19-Phys Sci, NEC

**NAS 8-34530 University of Alabama - Huntsville 1047**  
 Materials processing in low gravity program  
*Period Obligations*  
 06/19/81-07/07/84 FY83: \$40,000 TOTAL: \$373,032  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Workman, G. L. MSFC/Gardner, L. 13-Physics  
 MSFC/Horton, J.

**NAS 8-34534 University of Alabama - Huntsville 1048**  
 Assessment of the solar-terrestrial data base management system (DBMS)  
*Period Obligations*  
 08/12/81-12/31/82 FY83: \$12,125 TOTAL: \$24,125  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Horowitz, J. L. MSFC/Green, J. L. 22-Computer Science  
 MSFC/Baugher, C.

**NAS 8-34573 University of Alabama - Huntsville 1049**  
 Advanced solar physics experimental concepts to address particular science problems of interest  
*Period Obligations*  
 09/01/81-12/31/82 FY83: TOTAL: \$85,602  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wu, S. T. MSFC/Ballance, J. O. 19-Phys Sci, NEC  
 MSFC/Nein, M. E.

**NAS 8-34711 University of Alabama - Huntsville 1050**  
 Calculation of side lobe levels antenna mast  
*Period Obligations*  
 11/02/81-05/01/82 FY83: TOTAL: \$14,078  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Chan, C. H. MSFC/Thompson, W. E.  
 29-Math/Computer, NEC

**NAS 8-34953 University of Alabama - Huntsville 1051**  
 Determine mission configuration for future payloads for Spacelab missions and space plasma physics experiments working group  
*Period Obligations*  
 06/14/82-09/28/84 FY83: \$21,470 TOTAL: \$113,466  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wu, S. T. MSFC/Richards, L. O. 31-Atmos Sci

**NAS 8-34957 University of Alabama - Huntsville 1052**  
 Mercury-cadmium-telluride crystal growth studies  
*Period Obligations*  
 09/01/82-08/15/84 FY83: \$86,587 TOTAL: \$159,166  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Holland, L. R. MSFC/Lehoczky, S. L. 13-Physics  
 MSFC/Cothran, E. K.

**NAS 8-35052 University of Alabama - Huntsville 1053**  
 Shuttle HPM combustion velocity instability analysis  
*Period Obligations*  
 01/10/83-06/30/84 FY83: \$60,000 TOTAL: \$60,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Chung, T. J. MSFC/Forsythe, D. J. 31-Atmos Sci  
 MSFC/Miller, J. Q.

**NAS 8-35304 University of Alabama - Huntsville 1054**  
 Advanced solar observatory (ASO) science study group  
*Period Obligations*  
 12/30/82-01/31/84 FY83: \$68,800 TOTAL: \$68,800  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wu, S. T. MSFC/Roberts, W. T. 13-Physics  
 MSFC/Nein, M. E.

**NAS 8-35334 University of Alabama - Huntsville 1055**  
 New instrumentation for phase partitioning  
*Period Obligations*  
 06/29/83-05/31/86 FY83: \$45,000 TOTAL: \$45,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Harris, J. M. MSFC/Fogle, V. 59-Life Sci, NEC

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAS 8-35339 University of Alabama - Huntsville 1056**  
 Study of plasma source for spacecraft potential  
*Period Obligations*  
 06/29/83-12/28/83 FY83: \$11,791 TOTAL: \$11,791  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Olsen, R. C. MSFC/Chappel, C. R. 13-Physics  
 MSFC/Fields, S. A.

**NAS 8-35354 University of Alabama - Huntsville 1057**  
 Research study: Space radiation studies  
*Period Obligations*  
 07/22/83-07/21/84 FY83: \$48,000 TOTAL: \$48,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gregory, J. C. MSFC/Parnell, T. A. 13-Physics

**NAS 8-35362 University of Alabama - Huntsville 1058**  
 Cell partition in two polymer aqueous phases  
*Period Obligations*  
 07/21/83-06/21/86 FY83: \$47,000 TOTAL: \$47,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Harris, J. M. MSFC/Fogle, V. 59-Life Sci, NEC

**NAS 8-35663 University of Alabama - Huntsville 1059**  
 Atmospheric drag density studies  
*Period Obligations*  
 09/22/83-09/21/84 FY83: \$25,000 TOTAL: \$25,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Karr, G. P. MSFC/Smith, O. E. 31-Atmos Sci  
 MSFC/Smith, R. E.

**NGT 01-002-081 University of Alabama - Huntsville 1060**  
 Modeling of the evolution of magnetic field structure in an active region  
*Period Obligations*  
 09/01/80-08/31/83 FY83: TOTAL: \$28,200  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wu, S. T. HQ-LB/Carter, C. H. 19-Phys Sci, NEC

**NGT 01-002-803 University of Alabama - Huntsville 1061**  
 Graduate student researchers program  
*Period Obligations*  
 06/01/82-05/31/84 FY83: \$12,000 TOTAL: \$22,800  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Young, R. B. HQ-LB/Owens, F. C. 51-Biological Sci

**NGT 01-002-804 University of Alabama - Huntsville 1062**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/83-05/31/84 FY83: \$12,000 TOTAL: \$22,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Horowitz, J. L. HQ-LB/Owens, F. C. 22-Computer Science

**NGT 01-008-021 University of Alabama - Huntsville 1063**  
 Summer faculty fellowship program  
*Period Obligations*  
 01/01/76-12/31/84 FY83: \$283,359 TOTAL: \$869,983  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Karr, G. R. HQ-LB/Owens, F. C. 49-Engr, NEC

**NGT 01-008-800 University of Alabama - Huntsville 1064**  
 Graduate student researchers program  
*Period Obligations*  
 06/01/81-05/31/84 FY83: \$12,000 TOTAL: \$30,350  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Horowitz, J. L. HQ-LB/Owens, F. C. 13-Physics

**NGT 01-008-801 University of Alabama - Huntsville 1065**  
 Graduate student researchers program  
*Period Obligations*  
 04/01/81-05/31/83 FY83: TOTAL: \$8,400  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Horowitz, J. L. HQ-LB/Carter, C. H. 13-Physics

**NGT 01-008-802 University of Alabama - Huntsville 1066**  
 Graduate student researchers program  
*Period Obligations*  
 09/01/81-11/30/83 FY83: TOTAL: \$18,630  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gregory, J. C. HQ-LB/Owens, F. C. 13-Physics

**NAS 8-33507 University of Alabama - University 1067**  
 Space Shuttle induced environment contamination monitor (IECM) air sampler experiment  
*Period Obligations*  
 05/21/79-08/31/85 FY83: TOTAL: \$39,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bertsch, W. MSFC/Peters, P. N. 31-Atmos Sci  
 Zatko, D. A. MSFC/Hester, H. B.

**NAS 8-34724 University of Alabama - University 1068**  
 Graphite formation in cast iron  
*Period Obligations*  
 02/08/82-11/15/83 FY83: TOTAL: \$32,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Stefanescu, D. M. MSFC/Reeves, F. A. 47-Materials Engr  
 MSFC/Williams, J. R.

**NGT 01-002-099 University of Alabama - University 1069**  
 Summer faculty fellowship program in research  
*Period Obligations*  
 01/01/78-12/31/83 FY83: TOTAL: \$677,159  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Barfield, B. F. HQ-LB/Carter, C. H. 49-Engr, NEC

**NGT 01-002-800 University of Alabama - University 1070**  
 Graduate student researchers program  
*Period Obligations*  
 06/01/81-05/31/84 FY83: \$15,000 TOTAL: \$40,820  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Desmet, D. J. HQ-LB/Owens, F. C. 13-Physics

# NASA'S UNIVERSITY PROGRAM ALASKA

## ALASKA

**NAS 9-16719** **Alaska Pacific University** **1071**  
Research and development to devise a climate vegetation gradient model  
*Period* *Obligations*  
08/26/82-09/01/83 FY83: TOTAL: \$2,950  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ingram, J. JSC/Demel, K. J. 32-Geological Sci

**NAG 6-1** **University of Alaska - Fairbanks** **1072**  
Fluorescent plasma tracer and perturbation experiments from sounding rockets  
*Period* *Obligations*  
01/01/80-12/31/83 FY83: \$180,000 TOTAL: \$614,182  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wescott, E. M. GSFC/Early, L. J. 19-Phys Sci, NEC  
WFC/Pless, R. H.

**NAGW 269** **University of Alaska - Fairbanks** **1073**  
Numerical simulation of the turbulent cascade and voltage amplification mechanism in the magnetosphere  
*Period* *Obligations*  
01/01/82-11/30/83 FY83: \$30,833 TOTAL: \$60,825  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Swift, D. W. HQ-EE/Lynch, J. T. 19-Phys Sci, NEC  
HQ-EE/Schmerling, E. R.

**NAS 5-26868** **University of Alaska - Fairbanks** **1074**  
Modeling of the atmosphere-magnetosphere ionosphere system (MAMI)  
*Period* *Obligations*  
04/26/82-09/15/84 FY83: \$41,873 TOTAL: \$70,873  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rees, M. H. GSFC/O'Brien, J. J. 13-Physics

**NAS 5-27428** **University of Alaska - Fairbanks** **1075**  
Operations of Poker Flat research range  
*Period* *Obligations*  
12/01/82-11/30/83 FY83: \$977,144 TOTAL: \$977,144  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Brown, N. B. GSFC/Milliner, C. F. 31-Atmos Sci  
GSFC/Duffy, R. T.

**NAS 6-3065** **University of Alaska - Fairbanks** **1076**  
S/M and personnel for the operation and maintenance of the Poker Flat research range  
*Period* *Obligations*  
11/01/79-11/30/82 FY83: \$99,899 TOTAL: \$2,989,321  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Brown, N. B. GSFC/Milliner, C. F. 31-Atmos Sci  
Roederer, J. G. GSFC/Gray, J. W.

**NCA 2-20201** **University of Alaska - Fairbanks** **1077**  
Evaluation of LANDSAT MSS spectral data for reconnaissance wetlands mapping in interior Alaska  
*Period* *Obligations*  
06/01/82-08/31/83 FY83: TOTAL: \$18,468  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
George, T. H. ARC/Wilson, D. E. 32-Geological Sci

**NGL 02-001-092** **University of Alaska - Fairbanks** **1078**  
Application of remote sensing data to surveys of the Alaskan environment  
*Period* *Obligations*  
07/26/72-06/30/82 FY83: TOTAL: \$975,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Miller, J. M. HQ-EL/Tuyahov, A. J. 39-Env Sci, NEC

**NSG 7281** **University of Alaska - Fairbanks** **1079**  
A study of the relationship of the ring current and magnetospheric substorms  
*Period* *Obligations*  
10/01/76-03/31/83 FY83: TOTAL: \$25,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Akasofu, S. I. HQ-EZ/Taylor, W. W. 39-Env Sci, NEC  
HQ-EZ/Schmerling, E. R.

**NSG 7447** **University of Alaska - Fairbanks** **1080**  
Study of the relationship between the ring current and magnetospheric substorms: Study of possible relationship of sudden stratospheric warmings with magnetospheric substorms  
*Period* *Obligations*  
06/01/78-05/30/84 FY83: \$50,000 TOTAL: \$273,391  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Akasofu, S. I. HQ-EE/Lynch, J. T. 19-Phys Sci, NEC  
HQ-EE/Schmerling, E. R.

## ARIZONA

**NAG 1-338** **Arizona State University** **1081**  
Numerical solutions of the time-dependent Navier-Stokes equations using a finite-volume multi-grid approach  
*Period* *Obligations*  
02/17/83-02/16/84 FY83: \$24,625 TOTAL: \$24,625  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hassan, A. A. LARC/Holmes, B. J. 41-Aero Engr

**NAG 1-339** **Arizona State University** **1082**  
Tensile fracture of ductile materials  
*Period* *Obligations*  
02/09/83-02/08/84 FY83: \$26,970 TOTAL: \$26,970  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shaw, M. C. LARC/Newman, J. C., Jr.  
LARC/Davidson, J. R. 47-Materials Engr

**NAG 2-174** **Arizona State University** **1083**  
Synthesis to single particle and surface textural Aeolian data on Earth and Mars  
*Period* *Obligations*  
07/01/82-12/31/83 FY83: TOTAL: \$15,996  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Unavailable ARC/Pollack, J. B. 32-Geological Sci  
ARC/Summers, A. L.

**NASA'S UNIVERSITY PROGRAM**  
**ARIZONA (Continued)**

**NAG 2-217** **Arizona State University** **1084**  
 An evaluation of current speech technology for use in helicopter

Period	Obligations
01/01/83-12/31/83	FY83: \$30,000 TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer CASE Category
Damos, D. L.	ARC/Voorhees, J. W. 69-Psych, NEC

**NAG 3-6** **Arizona State University** **1085**  
 Transient response of rotor bearing systems using component mode synthesis

Period	Obligations
01/01/80-10/30/83	FY83: TOTAL: \$166,567
Prin. Invest.	NASA Tech. Officer CASE Category
Nelson, H. D.	LERC/Fleming, D. P. 46-Mech Engr
Rajan, M.	LERC/Kascak, A. F.

**NAG 3-112** **Arizona State University** **1086**  
 Parallel-processor simulation systems

Period	Obligations
10/15/80-10/11/84	FY83: \$81,917 TOTAL: \$299,493
Prin. Invest.	NASA Tech. Officer CASE Category
O'grady, E. P.	LERC/Krosel, S. M.
	LERC/Szuch, J. R. 22-Computer Science

**NAG 3-139** **Arizona State University** **1087**  
 NASA-ASU internship program

Period	Obligations
12/22/80-12/30/82	FY83: TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer CASE Category
Wang, E. Y.	LERC/Weinberg, I. 13-Physics
Backus, C. M.	LERC/Brandhorst, H. W.

**NAG 3-167** **Arizona State University** **1088**  
 An improved turbulence modeling for gas turbine combustors

Period	Obligations
06/01/81-05/30/84	FY83: TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer CASE Category
Mongia, H. C.	LERC/Warer, C. J. 46-Mech Engr

**NAG 3-252** **Arizona State University** **1089**  
 Evaluation of optical emission spectroscopy for sputtering rates in ion thruster propulsion systems

Period	Obligations
01/15/82-01/13/84	FY83: \$30,000 TOTAL: \$80,000
Prin. Invest.	NASA Tech. Officer CASE Category
Parsons, M. L.	LERC/Mantenieks, M. A. 13-Physics
Rock, B.	

**NAG 3-260** **Arizona State University** **1090**  
 Inhomogeneous swirling recirculating jets

Period	Obligations
02/21/82-02/19/84	FY83: \$96,980 TOTAL: \$185,529
Prin. Invest.	NASA Tech. Officer CASE Category
So, R. M.	LERC/Claus, R. W. 41-Aero Engr
Mongia, H. C.	

**NAG 3-383** **Arizona State University** **1091**  
 NASA-Arizona State University internship program

Period	Obligations
01/03/83-05/02/84	FY83: \$30,870 TOTAL: \$30,870
Prin. Invest.	NASA Tech. Officer CASE Category
Wang, E. Y.	LERC/Anderson, L. M. 45-Elec Engr

**NAG 5-358** **Arizona State University** **1092**  
 The ultraviolet light curve of selected binary stars

Period	Obligations
08/15/83-08/14/84	FY83: \$5,090 TOTAL: \$5,090
Prin. Invest.	NASA Tech. Officer CASE Category
Cowley, A.	GSFC/Kondo, Y. 11-Astronomy

**NAG 9-59** **Arizona State University** **1093**  
 Mineralogy of carbonaceous chondrites and cosmic dust particles

Period	Obligations
02/15/83-02/14/84	FY83: \$76,000 TOTAL: \$76,000
Prin. Invest.	NASA Tech. Officer CASE Category
Buseck, P. R.	JSC/Dietrich, J. W. 32-Geological Sci

**NAGW 1** **Arizona State University** **1094**  
 Planetary and Mars geomorphology

Period	Obligations
02/01/80-01/31/84	FY83: \$82,100 TOTAL: \$291,400
Prin. Invest.	NASA Tech. Officer CASE Category
Malin, M. C.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NAGW 24** **Arizona State University** **1095**  
 Aggregate formation and Aeolian action on Mars

Period	Obligations
04/15/80-09/14/83	FY83: TOTAL: \$57,889
Prin. Invest.	NASA Tech. Officer CASE Category
Krinsley, D.	HQ-EL/Boyce, J. M. 32-Geological Sci

**NAGW 56** **Arizona State University** **1096**  
 Impact cratering experiments

Period	Obligations
04/01/80-04/30/84	FY83: \$43,968 TOTAL: \$111,079
Prin. Invest.	NASA Tech. Officer CASE Category
Greeley, R.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NAGW 132** **Arizona State University** **1097**  
 Geological studies of the Galilean satellite

Period	Obligations
02/01/81-01/31/84	FY83: \$98,000 TOTAL: \$273,725
Prin. Invest.	NASA Tech. Officer CASE Category
Greeley, R.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NAGW 139** **Arizona State University** **1098**  
 Galilean satellite geomorphology

Period	Obligations
02/01/81-02/01/83	FY83: TOTAL: \$37,900
Prin. Invest.	NASA Tech. Officer CASE Category
Malin, M.	HQ-EL/Boyce, J. M. 32-Geological Sci

**NASA'S UNIVERSITY PROGRAM**  
**ARIZONA (Continued)**

**NAGW 143** **Arizona State University** **1099**  
 Matrix phases of carbonaceous chondrites  
*Period* *Obligations*  
 02/15/81-02/14/84 FY83: TOTAL: \$146,936  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Buseck, P. R. HQ-EL/Taylor, L. A. 32-Geological Sci  
 HQ-EL/Quaide, W. L.

**NAGW 182** **Arizona State University** **1100**  
 Phase equilibria in the Martian mantle  
*Period* *Obligations*  
 04/01/81-04/30/84 FY83: \$49,863 TOTAL: \$148,052  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Holloway, J. R. HQ-EL/Quaide, W. L. 32-Geological Sci  
 HQ-EL/Boyce, J. M.

**NAGW 245** **Arizona State University** **1101**  
 Hydrovolcanic explosions: Water melt interactions and resultant dispersal patterns  
*Period* *Obligations*  
 10/15/81-10/14/83 FY83: TOTAL: \$26,309  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Sheridan, M. F. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 263** **Arizona State University** **1102**  
 The determination of Martian surface properties and processes from Viking IRTM observations  
*Period* *Obligations*  
 12/15/81-12/14/83 FY83: \$75,000 TOTAL: \$141,988  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Greeley, R. HQ-EL/Quaide, W. L. 32-Geological Sci  
 HQ-EL/French, B. M.

**NAS 8-32937** **Arizona State University** **1103**  
 The effect of a dispersed second phase on the ionic conductivity of solid state electrolytes  
*Period* *Obligations*  
 12/13/77-12/13/82 FY83: TOTAL: \$201,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Wagner, J. B. MSFC/Reeves, F. A. 47-Materials Engr  
 MSFC/Rathz, T.

**NAS 8-34318** **Arizona State University** **1104**  
 Research study: Building and obstacles wakes  
*Period* *Obligations*  
 08/25/81-08/24/82 FY83: TOTAL: \$12,917  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Logan, E., Jr. MSFC/Alexander, M. B. 31-Atmos Sci

**NASW 3741** **Arizona State University** **1105**  
 Feasibility study to conduct windblown sediment transport experiments  
*Period* *Obligations*  
 03/24/83-09/01/83 FY83: \$17,032 TOTAL: \$17,032  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Greeley, R. HQ-MF/Holt, S. S. 32-Geological Sci  
 HQ-MF/Pritchard, E. B.

**NCA 2-35401** **Arizona State University** **1106**  
 Natural abundance 13c measurements of non-volatile acids: New approaches  
*Period* *Obligations*  
 10/01/83-09/30/84 FY83: \$10,000 TOTAL: \$10,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Yuen, G. ARC/Des Marais, D. J. 12-Chemistry

**NCC 2-202** **Arizona State University** **1107**  
 Examining the relation between subjective estimates of workload and individual difference in performances  
*Period* *Obligations*  
 08/15/82-10/31/83 FY83: \$70,355 TOTAL: \$70,355  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Damos, D. L. ARC/Hart, S. G. 69-Psych, NEC

**NCC 2-263** **Arizona State University** **1108**  
 Multiple-task performance to improve helicopter control  
*Period* *Obligations*  
 08/01/83-07/31/84 FY83: \$24,136 TOTAL: \$24,136  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Damos, D. ARC/Hartzell, E. J. 69-Psych, NEC

**NGL 03-001-001** **Arizona State University** **1109**  
 Development of improved procedures for sampling, characterizing and classifying meteorite specimens  
*Period* *Obligations*  
 04/16/83-02/27/84 FY83: TOTAL: \$427,704  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Moore, C. B. HQ-EL/Taylor, L. A. 32-Geological Sci  
 HQ-EL/Quaide, W. L.

**NGR 03-001-022** **Arizona State University** **1110**  
 Study of dynamic characteristics of a variable mass elastic body under high acceleration  
*Period* *Obligations*  
 05/24/85-12/31/83 FY83: TOTAL: \$13,775  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Meirovitch, L. LARC/Unavailable, 41-Aero Engr

**NGT 03-001-800** **Arizona State University** **1111**  
 Graduate student researchers program  
*Period* *Obligations*  
 06/01/80-08/31/83 FY83: TOTAL: \$34,580  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Moore, C. B. HQ-LB/Carter, C. H. 12-Chemistry

**NGT 03-001-801** **Arizona State University** **1112**  
 Graduate student researchers program  
*Period* *Obligations*  
 06/01/82-05/31/84 FY83: \$13,960 TOTAL: \$25,820  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Moore, C. B. HQ-LB/Owens, F. C. 13-Physics

**NSG 2284** **Arizona State University** **1113**  
 Aeolian geology studies  
*Period* *Obligations*  
 12/01/77-02/28/84 FY83: \$35,273 TOTAL: \$235,406  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Greeley, R. ARC/Pollack, J. 32-Geological Sci  
 ARC/Summers, A. L.

# NASA'S UNIVERSITY PROGRAM

## ARIZONA (Continued)

**NSG 3075** **Arizona State University** **1114**  
Study of multiple jet array impingement heat transfer characteristics

Period	Obligations
09/01/75-12/31/83	FY83: TOTAL: \$543,000
Prin. Invest.	NASA Tech. Officer CASE Category
Florschuetz, L. W.	LERC/Hippenstele, S. A. 41-Aero Engr
Metzger, D. E.	LERC/Gauntner, J. W.

**NSG 7040** **Arizona State University** **1115**  
The origin and early evolution of the solar system

Period	Obligations
04/01/74-02/24/84	FY83: TOTAL: \$425,627
Prin. Invest.	NASA Tech. Officer CASE Category
Larimer, J. W.	HQ-EL/Taylor, L. A. 32-Geological Sci
	HQ-EL/Quaide, W. L.

**NSG 7255** **Arizona State University** **1116**  
The nature and origin of organic compounds in carbonaceous meteorites

Period	Obligations
06/14/76-01/31/84	FY83: \$62,000 TOTAL: \$382,164
Prin. Invest.	NASA Tech. Officer CASE Category
Cronin, J. R.	HQ-EB/Devincenzi, D. L.
Yuen, G. U.	32-Geological Sci

**NSG 7415** **Arizona State University** **1117**  
Geological studies in planetology

Period	Obligations
12/01/77-01/31/84	FY83: \$220,000 TOTAL: \$1,231,943
Prin. Invest.	NASA Tech. Officer CASE Category
Greeley, R.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NSG 7548** **Arizona State University** **1118**  
Studies in Martian geology

Period	Obligations
03/01/79-03/31/84	FY83: \$75,000 TOTAL: \$483,142
Prin. Invest.	NASA Tech. Officer CASE Category
Greeley, R.	HQ-EL/Boyce, J. M. 31-Atmos Sci
	HQ-EL/Holt, H. E.

**NAGW 355** **Northern Arizona University** **1119**  
Photogeologic analysis of the JG-7 quadrangle of Ganymede

Period	Obligations
09/01/82-01/31/84	FY83: TOTAL: \$9,950
Prin. Invest.	NASA Tech. Officer CASE Category
Barnes, C. W.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NAG 1-141** **University of Arizona** **1120**  
Numerical study of large-eddy breakup and its effect on the drag characteristics on boundary layers

Period	Obligations
01/01/81-01/15/84	FY83: \$6,937 TOTAL: \$68,471
Prin. Invest.	NASA Tech. Officer CASE Category
Kinney, R. B.	LARC/Hefner, J. N. 41-Aero Engr
	LARC/Bushnell, D. M.

**NAG 2-52** **University of Arizona** **1121**  
The radial velocity search for extrasolar planets

Period	Obligations
10/01/80-11/30/83	FY83: \$65,846 TOTAL: \$220,935
Prin. Invest.	NASA Tech. Officer CASE Category
McMillan, R. S.	ARC/Black, D. C. 11-Astronomy
	ARC/Rathien, S. M.

**NAG 2-143** **University of Arizona** **1122**  
Participation in the Pioneer Venus mission

Period	Obligations
10/01/81-10/31/83	FY83: \$50,055 TOTAL: \$95,055
Prin. Invest.	NASA Tech. Officer CASE Category
Hunten, D. M.	ARC/Fimmel, R. O. 19-Phys Sci, NEC

**NAG 2-154** **University of Arizona** **1123**  
Development of low-background OC InSb detectors

Period	Obligations
01/01/82-09/30/82	FY83: TOTAL: \$11,930
Prin. Invest.	NASA Tech. Officer CASE Category
Low, F. J.	ARC/McCreight, C. R. 11-Astronomy
Young, E. T.	ARC/Goebel, J. H.

**NAG 2-161** **University of Arizona** **1124**  
New techniques of fabricating lightweight glass mirrors

Period	Obligations
01/01/82-10/31/84	FY83: \$64,714 TOTAL: \$139,414
Prin. Invest.	NASA Tech. Officer CASE Category
Angel, J. R.	ARC/Melugin, R. 11-Astronomy
Woolf, N. J.	

**NAG 2-206** **University of Arizona** **1125**  
Infrared spectroscopy of planetary atmospheres from the Kuiper Airborne Observatory

Period	Obligations
11/01/82-10/31/83	FY83: \$119,363 TOTAL: \$119,363
Prin. Invest.	NASA Tech. Officer CASE Category
Larson, H. P.	ARC/Haughney, L. C. 11-Astronomy
Davis, D. S.	
Fink, U.	

**NAG 2-220** **University of Arizona** **1126**  
Double arch mirror mount study

Period	Obligations
01/01/83-12/31/83	FY83: \$80,548 TOTAL: \$80,548
Prin. Invest.	NASA Tech. Officer CASE Category
Hillman, D. W.	ARC/Melugin, R. K. 49-Engr, NEC
Vukobratovich, D.	ARC/Lee, J. H.
Richard, R. M.	

**NAG 3-41** **University of Arizona** **1127**  
The application of probabilistic design theory to high temperature low cycle fatigue

Period	Obligations
06/01/80-05/28/84	FY83: \$48,484 TOTAL: \$167,988
Prin. Invest.	NASA Tech. Officer CASE Category
Eiseman, P. R.	LERC/Ensign, C. R. 47-Materials Engr
Chu, C. K.	

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<b>NAG 3-45</b>	<b>University of Arizona</b>		<b>1128</b>
	NASA/Lewis Research Center computational structures apprenticeships		
	<i>Period</i>	<i>Obligations</i>	
	05/01/80-09/30/82	FY83: TOTAL: \$177,465	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Gallagher, R. H.	LERC/Chamis, C. C.	41-Aero Engr
	Kamel, H. A.	LERC/Johns, R. H.	
	Heinrich, J. C.		
<b>NAG 3-357</b>	<b>University of Arizona</b>		<b>1129</b>
	Noise generated by airfoils encountering high frequency convected disturbances-effects of air oil shape, incidence angle and finite span sweep		
	<i>Period</i>	<i>Obligations</i>	
	11/30/82-11/29/83	FY83: \$42,920 TOTAL: \$42,920	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Kerschen, E. J.	LERC/Groeneweg, J. F.	41-Aero Engr
<b>NAG 3-392</b>	<b>University of Arizona</b>		<b>1130</b>
	The optics of surface plasmas polaritons		
	<i>Period</i>	<i>Obligations</i>	
	01/25/83-01/24/84	FY83: \$78,190 TOTAL: \$78,190	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Stegeman, G. I.	LERC/Anderson, L. M.	13-Physics
	Burke, J. J.		
<b>NAG 3-430</b>	<b>University of Arizona</b>		<b>1131</b>
	Dilution jet mixing program improvement		
	<i>Period</i>	<i>Obligations</i>	
	05/15/83-09/15/83	FY83: \$5,887 TOTAL: \$5,887	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Petersen, R. E.	LERC/Holdeman, J. D.	41-Aero Engr
<b>NAG 5-38</b>	<b>University of Arizona</b>		<b>1132</b>
	Study of the hottest white dwarfs from the Palomar-Green study		
	<i>Period</i>	<i>Obligations</i>	
	04/01/80-11/30/83	FY83: TOTAL: \$57,305	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Green, R. F.	GSFC/Kondo, Y.	11-Astronomy
	Liebert, J. W.		
	Elvis, M.		
<b>NAG 5-57</b>	<b>University of Arizona</b>		<b>1133</b>
	Evolution of the chromospheres transition regions in dwarf stars		
	<i>Period</i>	<i>Obligations</i>	
	05/15/80-10/14/81	FY83: TOTAL: \$7,940	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Giampapa, M. S.	GSFC/Boggess, A.	11-Astronomy
	Worden, S. P.		
<b>NAG 5-86</b>	<b>University of Arizona</b>		<b>1134</b>
	Spectroscopic observations of comets		
	<i>Period</i>	<i>Obligations</i>	
	07/01/80-10/31/81	FY83: TOTAL: \$3,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Larson, S.	GSFC/Donn, B.	11-Astronomy
<b>NAG 5-143</b>	<b>University of Arizona</b>		<b>1135</b>
	Solar diameter measurements for study of Sun climate coupling		
	<i>Period</i>	<i>Obligations</i>	
	06/01/81-11/30/82	FY83: TOTAL: \$43,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hill, H. A.	GSFC/Wolfe, C. L.	31-Atmos Sci
<b>NAG 5-196</b>	<b>University of Arizona</b>		<b>1136</b>
	Spectroradiometric considerations for advanced land observation systems		
	<i>Period</i>	<i>Obligations</i>	
	07/01/81-07/31/84	FY83: \$60,000 TOTAL: \$117,417	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Slater, P. N.	GSFC/Ostrow, H.	13-Physics
		GSFC/Barnes, W. L.	
<b>NAG 5-221</b>	<b>University of Arizona</b>		<b>1137</b>
	Lyman continuum observations of broad absorption line quasi-stellar objects		
	<i>Period</i>	<i>Obligations</i>	
	02/15/82-02/14/83	FY83: TOTAL: \$8,983	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Turnshek, D. A.	GSFC/Boggess, A.	11-Astronomy
<b>NAG 5-264</b>	<b>University of Arizona</b>		<b>1138</b>
	Ultraviolet/optical/infrared observations of broad line radio galaxies		
	<i>Period</i>	<i>Obligations</i>	
	08/15/82-11/14/83	FY83: \$7,900 TOTAL: \$14,900	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Puetter, R. C.	GSFC/Kondo, Y.	11-Astronomy
	Rudy, R. J.		
<b>NAG 5-326</b>	<b>University of Arizona</b>		<b>1139</b>
	Deformation within and between lithospheric plates: A finite element analysis		
	<i>Period</i>	<i>Obligations</i>	
	06/01/83-05/31/84	FY83: \$22,000 TOTAL: \$22,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Richardson, R.	GSFC/Welker, J. E.	32-Geological Sci
<b>NAG 5-340</b>	<b>University of Arizona</b>		<b>1140</b>
	Monitoring the physical solar diameter		
	<i>Period</i>	<i>Obligations</i>	
	07/01/83-06/30/84	FY83: \$24,000 TOTAL: \$24,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hill, H. A.	GSFC/Wolff, C. L.	31-Atmos Sci
<b>NAG 8-370</b>	<b>University of Arizona</b>		<b>1141</b>
	The X-ray properties of close pairs of galaxies and low spectral resolution optical survey of the HEAO-B high resolution imager and imaging proportional counter fields		
	<i>Period</i>	<i>Obligations</i>	
	08/15/80-08/15/83	FY83: TOTAL: \$29,079	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Stocke, J. T.	MSFC/Stone, J. F.	11-Astronomy



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**NAG 8-380**                      **University of Arizona**                      **1142**  
Survey of bright (PG) quasars  
*Period*                                      *Obligations*  
08/22/80-09/22/82                      FY83:                      TOTAL: \$8,623  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Green, R.                      MSFC/Stone, J. F.                      11-Astronomy

**NAG 9-38**                      **University of Arizona**                      **1149**  
Brecciation and accretion history of meteorites  
*Period*                                      *Obligations*  
03/01/83-02/29/84                      FY83: \$25,000                      TOTAL: \$25,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Wilkening, L. L.                      JSC/Dietrich, J. W.                      12-Chemistry

**NAG 8-387**                      **University of Arizona**                      **1143**  
A search for an X-ray halo in Abell 2255  
*Period*                                      *Obligations*  
12/08/80-12/31/82                      FY83:                      TOTAL: \$23,393  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Scott, J.                      MSFC/Stone, J. F.                      11-Astronomy  
Holman, G. D.

**NAG 9-39**                      **University of Arizona**                      **1150**  
Meteoritic basalts  
*Period*                                      *Obligations*  
02/01/83-01/31/84                      FY83: \$24,957                      TOTAL: \$24,957  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Drake, M. J.                      JSC/Dietrich, J. W.                      12-Chemistry

**NAG 8-402**                      **University of Arizona**                      **1144**  
Search for X-rays from knots in irregular galaxies  
*Period*                                      *Obligations*  
06/15/81-01/14/83                      FY83:                      TOTAL: \$6,292  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Tapia, S.                      MSFC/Stone, J. F.                      11-Astronomy  
Lebofski, M. J.  
Charles, P.

**NAGW 55**                      **University of Arizona**                      **1151**  
Absorption of sunlight in the atmosphere of Venus  
*Period*                                      *Obligations*  
01/01/80-04/30/82                      FY83:                      TOTAL: \$109,952  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Tomasko, M.                      HQ-EL/Brinton, H. C.                      41-Aero Engr

**NAG 8-403**                      **University of Arizona**                      **1145**  
Observations of very hot white dwarfs with Einstein  
*Period*                                      *Obligations*  
06/15/81-06/07/83                      FY83:                      TOTAL: \$3,575  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Liebert, J. W.                      MSFC/Stone, J. F.                      11-Astronomy  
Green, R. F.  
Shipman, H. L.

**NAGW 67**                      **University of Arizona**                      **1152**  
Investigation of the chemical dynamics of the Venus atmosphere  
*Period*                                      *Obligations*  
06/01/80-11/30/83                      FY83:                      TOTAL: \$97,362  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Sil, G. T.                      HQ-EL/Brinton, H. C.                      31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NAG 8-442**                      **University of Arizona**                      **1146**  
Optical spectral identification of serendipitous sources found with HEAO-B  
*Period*                                      *Obligations*  
09/15/82-09/14/84                      FY83: \$19,950                      TOTAL: \$35,630  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Stoeke, J. T.                      MSFC/Manning, H. S.                      11-Astronomy  
Liebert, J. W.

**NAGW 121**                      **University of Arizona**                      **1153**  
A program of innovative research in optic and electro-optics for space astronomy  
*Period*                                      *Obligations*  
11/15/80-11/14/83                      FY83: \$174,969                      TOTAL: \$365,898  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Angel, J. R.                      HQ-E/Rosendhal, J. D.                      11-Astronomy  
Stockman, H. S.                      HQ-EP/Schrom, J. S.  
Woolf, H. J.

**NAG 9-36**                      **University of Arizona**                      **1147**  
High-precision polarimetry of meteorites  
*Period*                                      *Obligations*  
03/01/83-02/29/84                      FY83: \$24,986                      TOTAL: \$24,986  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Zellner, B. H.                      JSC/Dietrich, J. W.                      13-Physics

**NAGW 124**                      **University of Arizona**                      **1154**  
Studies of X-ray clusters of galaxies  
*Period*                                      *Obligations*  
10/01/80-11/30/83                      FY83: \$19,930                      TOTAL: \$56,566  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Scott, J. S.                      HQ-EZ/Kaluzienski, L. J.                      11-Astronomy  
HQ-EZ/Opp, A. G.

**NAG 9-37**                      **University of Arizona**                      **1148**  
Rare earths and other trace elements in separates from chondrites  
*Period*                                      *Obligations*  
03/01/83-02/29/84                      FY83: \$91,100                      TOTAL: \$91,100  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Boynton, W. V.                      JSC/Dietrich, J. W.                      12-Chemistry

**NAGW 134**                      **University of Arizona**                      **1155**  
The relaxation of craters in ice  
*Period*                                      *Obligations*  
02/01/81-01/31/83                      FY83:                      TOTAL: \$60,753  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Woronow, A.                      HQ-EL/Boyce, J. M.                      32-Geological Sci  
HQ-EL/Holt, H. E.

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<b>NAGW 135</b>			<b>University of Arizona</b>			<b>1156</b>
Geologic investigations of Io, Ganymede and Callisto						
<i>Period</i>		<i>Obligations</i>				
02/01/81-02/31/84	FY83: \$55,000	TOTAL: \$132,098				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Strom, R. G.	HQ-EL/Boyce, J. M.	32-Geological Sci				
	HQ-EL/Holt, H. E.					
<b>NAGW 149</b>			<b>University of Arizona</b>			<b>1157</b>
Support for preparation of planetary science and the lunar and planetary laboratory book on Venus						
<i>Period</i>		<i>Obligations</i>				
04/01/81-03/31/83	FY83:	TOTAL: \$35,000				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Hunten, D. M.	HQ-EL/Brinton, H. C.	31-Atmos Sci				
<b>NAGW 157</b>			<b>University of Arizona</b>			<b>1158</b>
Study of the interaction of the Jovian magnetosphere with the rings and the Galilean satellites						
<i>Period</i>		<i>Obligations</i>				
03/15/81-03/14/84	FY83: \$30,000	TOTAL: \$90,000				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Hood, L. L.	HQ-EE/Lynch, J. T.	13-Physics				
	HQ-EL/Evans, N.					
<b>NAGW 192</b>			<b>University of Arizona</b>			<b>1159</b>
Higher-order gravity field at Jupiter						
<i>Period</i>		<i>Obligations</i>				
04/15/81-04/14/84	FY83: \$55,000	TOTAL: \$154,994				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Hubbard, W. B.	HQ-EL/Quaide, W. L.	32-Geological Sci				
	HQ-EL/French, B. M.					
<b>NAGW 220</b>			<b>University of Arizona</b>			<b>1160</b>
Meteorite basalts						
<i>Period</i>		<i>Obligations</i>				
09/01/81-01/31/84	FY83:	TOTAL: \$35,816				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Drake, M. J.	HQ-EL/French, B. M.	32-Geological Sci				
	HQ-EL/Quaide, W. L.					
<b>NAGW 224</b>			<b>University of Arizona</b>			<b>1161</b>
Speckle interferometry applied to asteroid and other solar system objects						
<i>Period</i>		<i>Obligations</i>				
08/01/81-07/31/84	FY83: \$42,351	TOTAL: \$114,790				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Drummond, J. D.	HQ-EL/Brunk, W. E.	11-Astronomy				
	HQ-EL/Brinton, H. C.					
<b>NAGW 227</b>			<b>University of Arizona</b>			<b>1162</b>
Skeletal muscle metabolism in hypokinetic rats						
<i>Period</i>		<i>Obligations</i>				
07/01/81-11/30/83	FY83:	TOTAL: \$63,788				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Tischler, M.	HQ-EB/Halstead, T. W.	51-Biological Sci				
<b>NAGW 247</b>			<b>University of Arizona</b>			<b>1163</b>
Cometary spectroscopy						
<i>Period</i>		<i>Obligations</i>				
11/01/81-10/31/83	FY83: \$26,097	TOTAL: \$49,099				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Larson, S. M.	HQ-EL/Brunk, W. E.	11-Astronomy				
	HQ-EL/Brinton, H. C.					
<b>NAGW 248</b>			<b>University of Arizona</b>			<b>1164</b>
Design study of entry probe spectro reflectometer						
<i>Period</i>		<i>Obligations</i>				
10/01/81-07/31/83	FY83:	TOTAL: \$57,110				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Sill, G.	HQ-EL/Brinton, H. C.	11-Astronomy				
	HQ-EL/Quaide, W. L.					
<b>NAGW 262</b>			<b>University of Arizona</b>			<b>1165</b>
Development of a clean optical telescope						
<i>Period</i>		<i>Obligations</i>				
12/15/81-11/14/82	FY83:	TOTAL: \$29,088				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Brown, R. A.	HQ-EL/Brunk, W. E.	31-Atmos Sci				
	HQ-EL/Brinton, H. C.					
<b>NAGW 285</b>			<b>University of Arizona</b>			<b>1166</b>
Hydrogeomorphic studies of Mars						
<i>Period</i>		<i>Obligations</i>				
01/15/82-04/14/84	FY83: \$19,999	TOTAL: \$59,999				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Baker, V. R.	HQ-EL/Boyce, J. M.	32-Geological Sci				
	HQ-EL/Holt, H. E.					
<b>NAGW 331</b>			<b>University of Arizona</b>			<b>1167</b>
Optical spectrometer to measure atmospheric composition from entry probes						
<i>Period</i>		<i>Obligations</i>				
05/01/82-08/31/84	FY83: \$50,037	TOTAL: \$100,037				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Tomasko, M.	HQ-EL/Brinton, H. C.	31-Atmos Sci				
Wolfe, W. L.	HQ-EL/Brunk, W. E.					
<b>NAGW 338</b>			<b>University of Arizona</b>			<b>1168</b>
Effects of muscle atrophy on motor control						
<i>Period</i>		<i>Obligations</i>				
06/01/82-10/31/84	FY83: \$67,999	TOTAL: \$107,946				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Stuart, D. G.	HQ-EB/Halstead, T. W.	51-Biological Sci				
<b>NAGW 340</b>			<b>University of Arizona</b>			<b>1169</b>
Origin and evolution of planetary atmospheres						
<i>Period</i>		<i>Obligations</i>				
07/01/82-07/31/84	FY83: \$110,535	TOTAL: \$150,535				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Lewis, J. S.	HQ-EL/Brinton, H. C.	31-Atmos Sci				
	HQ-EL/Brunk, W. E.					

**NASA'S UNIVERSITY PROGRAM**  
**ARIZONA (Continued)**

**NAGW 357** **University of Arizona** **1170**  
Muscle contractility and protein turnover  
*Period* *Obligations*  
06/01/82-05/30/83 FY83: TOTAL: \$2,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tischler, M. E. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 414** **University of Arizona** **1171**  
Asteroid population statistics  
*Period* *Obligations*  
02/01/83-01/31/84 FY83: \$34,665 TOTAL: \$34,665  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Zellner, B. H. HQ-EL/Brunk, W. E. 11-Astronomy  
HQ-EL/Brinton, H. C.

**NAGW 424** **University of Arizona** **1172**  
Coupled physical and chemical evolution of the small terrestrial planets  
*Period* *Obligations*  
02/01/83-02/31/84 FY83: \$48,342 TOTAL: \$48,342  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Herbert, F. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 428** **University of Arizona** **1173**  
Crater modification by gravity  
*Period* *Obligations*  
04/15/83-04/14/84 FY83: \$69,255 TOTAL: \$69,255  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Melosh, H. J. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 500** **University of Arizona** **1174**  
Venus aeronomy  
*Period* *Obligations*  
10/01/83-08/31/84 FY83: \$140,000 TOTAL: \$140,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kumar, S. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NAS 2-6265** **University of Arizona** **1175**  
Imaging photopolarimeter experiment data analysis Pioneer 10 and 11  
*Period* *Obligations*  
11/01/70-03/31/82 FY83: TOTAL: \$2,557,629  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gehrels, A. M. ARC/Hall, C. F. 11-Astronomy  
Doose, L. R. ARC/Porter, D. L.

**NAS 2-9487** **University of Arizona** **1176**  
Pioneer Venus data analysis  
*Period* *Obligations*  
01/06/78-09/30/81 FY83: TOTAL: \$178,615  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hunten, D. M. ARC/Fimmel, R. O. 31-Atmos Sci  
ARC/Dyer, J.

**NAS 2-10890** **University of Arizona** **1177**  
Operation and maintenance of the NASA-owned 1.5 meter telescope located at Mt. Lemmon, Arizona  
*Period* *Obligations*  
01/01/81-12/31/83 FY83: \$90,131 TOTAL: \$290,817  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Larson, H. P. ARC/Haughney, L. C. 11-Astronomy  
ARC/Gillespie, C. M.

**NAS 2-11647** **University of Arizona** **1178**  
Analysis of photometry and polarimetry of Jupiter and Saturn from the Pioneer 10/11 missions  
*Period* *Obligations*  
05/16/83-05/15/84 FY83: \$79,915 TOTAL: \$79,915  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tomasko, M. G. ARC/Fimmel, R. O. 11-Astronomy  
Doose, L. R. ARC/Craig, R. A.  
Smith, P. H.

**NAS 5-25484** **University of Arizona** **1179**  
Support to the space telescope wide field planetary camera development team  
*Period* *Obligations*  
02/01/79-12/31/83 FY83: \$35,028 TOTAL: \$150,848  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Smith, B. A. GSFC/Fellerman, K. 31-Atmos Sci

**NAS 5-25733** **University of Arizona** **1180**  
Space telescope/high resolution spectrograph (HRS) extragalactic studies  
*Period* *Obligations*  
06/18/79-04/01/85 FY83: TOTAL: \$9,781  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Weymann, R. J. GSFC/Vitagliano, H. D. 11-Astronomy

**NAS 5-25955** **University of Arizona** **1181**  
Scientific activities of the high resolution ultraviolet spectrometer and polarimeter for the Solar Maximum Mission  
*Period* *Obligations*  
11/14/79-02/29/84 FY83: TOTAL: \$12,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Beckers, J. M. GSFC/Schmadabeck, R. 11-Astronomy  
GSFC/Woodgate, B. E.

**NAS 5-26575** **University of Arizona** **1182**  
Development of a new class of liquid helium cooled Fabry-Perot interference filter  
*Period* *Obligations*  
04/29/81-11/29/83 FY83: TOTAL: \$80,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Low, F. J. GSFC/Arens, J. F. 11-Astronomy  
Nishimura, N. GSFC/Heaney, J. B.

**NAS 5-26869** **University of Arizona** **1183**  
Origin of plasmas in the Earth's neighborhood (OPEN) mission  
*Period* *Obligations*  
05/14/82-09/15/84 FY83: \$26,047 TOTAL: \$55,047  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sonett, C. P. GSFC/O'Brien, J. J. 13-Physics

**NASA'S UNIVERSITY PROGRAM**  
**ARIZONA (Continued)**

**NAS 5-27382**      **University of Arizona**      **1184**  
 LANDSAT-D image data quality analysis calibration of the  
 thematic mapper and the multispectral  
*Period*      *Obligations*  
 10/29/82-02/28/85      FY83: \$170,000      TOTAL: \$170,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Slater, P.      GSFC/Gordon, F., Jr.      99-Multi-Discip

**NAS 5-27519**      **University of Arizona**      **1185**  
 Observational research into the magnetohydrodynamics of  
 sunspots and into stellar analogues of solar UV variability  
*Period*      *Obligations*  
 11/30/82-05/01/84      FY83: \$9,000      TOTAL: \$9,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Beckers, J. M.      GSFC/Stouffer, C.      11-Astronomy

**NAS 8-31948**      **University of Arizona**      **1186**  
 Automated analytical electrophoresis apparatus  
*Period*      *Obligations*  
 05/17/76-06/30/83      FY83:      TOTAL: \$305,919  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Bartels, P. H.      MSFC/Snyder, R. S.      59-Life Sci, NEC  
                                  MSFC/Nerren, B. H.

**NAS 8-32950**      **University of Arizona**      **1187**  
 Hormone purification by isoelectric focusing in space  
*Period*      *Obligations*  
 03/29/78-09/30/84      FY83: \$85,000      TOTAL: \$522,800  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Bier, M.      MSFC/Moore, W. W., Jr.      59-Life Sci, NEC

**NAS 8-33718**      **University of Arizona**      **1188**  
 Lightning detection from space  
*Period*      *Obligations*  
 02/11/80-09/30/82      FY83:      TOTAL: \$39,350  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Krider, P.      MSFC/Wagnon, F. W.      49-Engr, NEC  
                                  MSFC/Harper, J. W.

**NAS 8-33815**      **University of Arizona**      **1189**  
 Computer studies of baroclinic stability in spherical geometry  
*Period*      *Obligations*  
 03/07/80-05/31/83      FY83:      TOTAL: \$75,185  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Gall, R. L.      MSFC/Fowles, W. W.      31-Atmos Sci  
                                  MSFC/Smith, G. T.

**NAS 8-34734**      **University of Arizona**      **1190**  
 The optical characteristics of lightning  
*Period*      *Obligations*  
 07/01/82-06/30/84      FY83: \$35,000      TOTAL: \$55,250  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Krider, E. P.      MSFC/Christian, H. J.      31-Atmos Sci  
                                  MSFC/Smith, G. T.

**NAS 9-16268**      **University of Arizona**      **1191**  
 Study of cellular immune response  
*Period*      *Obligations*  
 02/01/81-09/30/82      FY83:      TOTAL: \$56,800  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Criswell, B. S.      JSC/Taylor, G. R.      56-Medical Sciences

**NAS 9-16838**      **University of Arizona**      **1192**  
 Lymphocyte proliferation in weightlessness  
*Period*      *Obligations*  
 02/23/83-09/30/86      FY83: \$15,000      TOTAL: \$15,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Criswell, B. S.      JSC/McCollum, G. W.      59-Life Sci, NEC

**NASW 3454**      **University of Arizona**      **1193**  
 Design study for a scanning facility for Earth crossing asteroids  
*Period*      *Obligations*  
 10/16/80-11/30/83      FY83: \$196,809      TOTAL: \$775,528  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Gehrels, T.      HQ-EL/Brunk, W. E.      11-Astronomy  
                                  HQ-EL/Brinton, H. C.

**NASW 3627**      **University of Arizona**      **1194**  
 Comet Halley neutral gas experiment  
*Period*      *Obligations*  
 05/01/82-03/17/84      FY83: \$49,998      TOTAL: \$99,998  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Hsieh, K. C.      HQ-EL/Brunk, W. E.      11-Astronomy  
                                  HQ-EL/Brinton, H. C.

**NASW 3655**      **University of Arizona**      **1195**  
 Symposium and book on planet Saturn  
*Period*      *Obligations*  
 07/15/82-12/31/83      FY83:      TOTAL: \$10,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Gehrels, T.      HQ-EL/Brunk, W. E.      11-Astronomy  
                                  HQ-EL/Brinton, H. C.

**NASW 3703**      **University of Arizona**      **1196**  
 Space astronomy infrared detector development  
*Period*      *Obligations*  
 11/01/82-10/31/83      FY83: \$154,868      TOTAL: \$154,868  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Low, F. J.      HQ-EZ/Bogess, N. W.      11-Astronomy  
                                  HQ-EZ/Weiler, E. J.

**NASW 3719**      **University of Arizona**      **1197**  
 Partial support for preparation of the book 'Planetary Rings'  
*Period*      *Obligations*  
 02/15/83-02/14/84      FY83: \$21,980      TOTAL: \$21,980  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Gehrels, T.      HQ-EL/Brunk, W. E.      11-Astronomy  
                                  HQ-EL/Evans, N.

**NAS10-10082**      **University of Arizona**      **1198**  
 Thunderstorm research using KSC-USAF electric field measuring  
 system and its operational utilization at KSC  
*Period*      *Obligations*  
 03/01/81-02/28/82      FY83:      TOTAL: \$45,030  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Krider, E. P.      KSC/Dietz, W. R.      31-Atmos Sci

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**NAS13-172**                      **University of Arizona**                      **1199**  
Environmental sampling for monitoring decertification indicators  
*Period*    *Obligations*  
03/16/81-03/15/82                      FY83:                      TOTAL: \$24,876  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Hutchinson, C. F.                      NSTL/Musick, H. B.                      39-Env Sci, NEC

**NGL 03-002-313**                      **University of Arizona**                      **1206**  
Remote sensing applications for state and local government  
*Period*    *Obligations*  
03/07/72-02/28/83                      FY83:                      TOTAL: \$1,245,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Johnson, J. D.                      HQ-ET/Vitale, J. A.                      39-Env Sci, NEC

**NAS13-198**                      **University of Arizona**                      **1200**  
Environmental sampling for monitoring range land conditions  
*Period*    *Obligations*  
05/26/82-05/25/83                      FY83:                      TOTAL: \$33,875  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Hutchinson, C. F.                      NSTL/Musick, H. B.                      32-Geological Sci

**NGR 03-002-107**                      **University of Arizona**                      **1207**  
Basic research in astrophysics and space science  
*Period*    *Obligations*  
09/01/67-09/30/82                      FY83:                      TOTAL: \$758,063  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Hsieh, K. C.                      HQ-EZ/Mayr, H. G.                      13-Physics  
HQ-EZ/Schmerling, E. R.

**NCA 2-40301**                      **University of Arizona**                      **1201**  
Analysis of wind shear and turbulence encounters using airline flight records  
*Period*    *Obligations*  
01/01/83-12/31/83                      FY83: \$30,000                      TOTAL: \$30,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Parks, E. K.                      ARC/Bach, R. E., Jr.                      41-Aero Engr  
ARC/Wingrove, R. C.

**NGR 03-002-171**                      **University of Arizona**                      **1208**  
Analysis of carbonaceous meteorites  
*Period*    *Obligations*  
10/26/68-11/30/83                      FY83: \$69,000                      TOTAL: \$811,884  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Nagy, B.                      HQ-EB/Devincenzi, D. L.                      32-Geological Sci

**NCA 2-40302**                      **University of Arizona**                      **1202**  
An investigation of spectrometer concepts for use on the shuttle infrared telescope facility  
*Period*    *Obligations*  
07/01/83-12/01/83                      FY83: \$6,773                      TOTAL: \$6,773  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Thompson, R. I.                      ARC/Erickson, E. F.                      11-Astronomy

**NGR 03-002-219**                      **University of Arizona**                      **1209**  
Photopolarimetry of Mercury, Mars, and satellites  
*Period*    *Obligations*  
02/13/70-11/30/82                      FY83:                      TOTAL: \$463,752  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Gehrels, A. M.                      HQ-EL/Brunk, W. E.                      11-Astronomy  
HQ-EL/Brinton, H. C.

**NCC 2-234**                      **University of Arizona**                      **1203**  
Modulation transfer function analysis of LANDSAT-4 thematic mapper  
*Period*    *Obligations*  
02/01/83-01/31/84                      FY83: \$41,117                      TOTAL: \$41,117  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Schowengerdt, R. A.                      ARC/Wrigley, R. C.                      39-Env Sci, NEC

**NGR 03-002-269**                      **University of Arizona**                      **1210**  
Operation of a 30 cm flying infrared telescope  
*Period*    *Obligations*  
05/04/71-07/31/85                      FY83: \$154,705                      TOTAL: \$943,215  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Low, F. J.                      HQ-EZ/Bogges, N. W.                      11-Astronomy  
HQ-EZ/Weiler, E. J.

**NGL 03-002-002**                      **University of Arizona**                      **1204**  
Planetary, spectroscopic, selenodetic and physical studies of lunar surface  
*Period*    *Obligations*  
08/12/61-06/30/84                      FY83: \$40,000                      TOTAL: \$3,059,466  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Smith, J. C.                      HQ-EL/Brunk, W. E.                      11-Astronomy  
HQ-EL/Brinton, H. C.

**NGR 03-002-332**                      **University of Arizona**                      **1211**  
Infrared spectroscopy of the planets from 1-5.6 micron with the medium-resolution LPL Fourier interferometer  
*Period*    *Obligations*  
03/05/73-10/31/82                      FY83:                      TOTAL: \$853,367  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Larson, H. P.                      ARC/Haughney, L. C.                      11-Astronomy

**NGL 03-002-081**                      **University of Arizona**                      **1205**  
Photometry and polarimetry of minor planets  
*Period*    *Obligations*  
03/14/66-09/30/84                      FY83: \$89,638                      TOTAL: \$683,095  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Gehrels, T.                      HQ-EL/Brunk, W. E.                      11-Astronomy  
HQ-EL/Brinton, H. C.

**NGR 03-002-370**                      **University of Arizona**                      **1212**  
An investigation of electromagnetic processes in the early solar system with bearing on thermal evolution and fossil magnetism  
*Period*    *Obligations*  
10/01/73-01/31/84                      FY83: \$49,311                      TOTAL: \$475,544  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Sonett, C. P.                      HQ-EL/Quaide, W. L.                      32-Geological Sci  
HQ-EL/French, B. M.



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<b>NSG 7333</b>	<b>University of Arizona</b>	<b>1227</b>
Study of isoelectric focusing for proteins and peptide hormones in a microgravity environment		
<i>Period</i>	<i>Obligations</i>	
04/01/79-04/30/86	FY83: \$175,033 TOTAL: \$1,550,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bier, M.	HQ-EL/Tuyahov, A. J.	13-Physics
<b>NSG 7368</b>	<b>University of Arizona</b>	<b>1228</b>
A deep near infrared photographic sky survey as a support tool for the infrared astronomical satellite		
<i>Period</i>	<i>Obligations</i>	
06/15/77-10/14/83	FY83: TOTAL: \$176,166	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Craine, E. R.	HQ-EZ/Boggess, N. W.	11-Astronomy
	HQ-EZ/Weiler, E. J.	
<b>NSG 7419</b>	<b>University of Arizona</b>	<b>1229</b>
Generation and behavior of solar system magnetic fields		
<i>Period</i>	<i>Obligations</i>	
03/01/79-06/30/84	FY83: \$53,490 TOTAL: \$258,559	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Levy, E. H.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/Taylor, L. A.	
<b>NSG 7436</b>	<b>University of Arizona</b>	<b>1230</b>
Rare earths in inclusions from different classes of carbonaceous chondrites		
<i>Period</i>	<i>Obligations</i>	
03/01/78-03/13/84	FY83: TOTAL: \$320,554	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Boynton, W. V.	HQ-EL/Taylor, L. A.	32-Geological Sci
	HQ-EL/Quaide, W. L.	
<b>NSG 7485</b>	<b>University of Arizona</b>	<b>1231</b>
Stratospheric aeronomy		
<i>Period</i>	<i>Obligations</i>	
09/01/78-09/30/84	FY83: \$51,443 TOTAL: \$272,005	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hunten, D. M.	HQ-EE/Butler, D. M.	31-Atmos Sci
	HQ-EE/Watson, R. T.	
<b>NSG 7502</b>	<b>University of Arizona</b>	<b>1232</b>
Asteroid population statistics		
<i>Period</i>	<i>Obligations</i>	
09/01/78-05/31/83	FY83: TOTAL: \$111,809	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zellner, B. H.	HQ-EL/Brunk, W. E.	11-Astronomy
Tedesco, E. F.	HQ-EL/Brinton, H. C.	
<b>NSG 7544</b>	<b>University of Arizona</b>	<b>1233</b>
Martian landforms response to geologic setting		
<i>Period</i>	<i>Obligations</i>	
04/01/79-01/31/82	FY83: TOTAL: \$75,848	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Woronow, A.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	
<b>NSG 7558</b>	<b>University of Arizona</b>	<b>1234</b>
Planetary aeronomy and related studies		
<i>Period</i>	<i>Obligations</i>	
04/01/79-04/30/84	FY83: \$38,366 TOTAL: \$166,091	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hunten, D. M.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	
<b>NSG 7573</b>	<b>University of Arizona</b>	<b>1235</b>
Scattering of light ammonia crystals		
<i>Period</i>	<i>Obligations</i>	
09/01/78-09/30/84	FY83: \$60,000 TOTAL: \$278,552	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tomasko, M. G.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	
<b>NSG 7576</b>	<b>University of Arizona</b>	<b>1236</b>
Geochemical evolution of the Moon and igneous meteorites		
<i>Period</i>	<i>Obligations</i>	
05/01/79-05/31/84	FY83: \$92,525 TOTAL: \$442,368	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Drake, M. J.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	
<b>NSG 7577</b>	<b>University of Arizona</b>	<b>1237</b>
Terrestrial analog studies of relationships		
<i>Period</i>	<i>Obligations</i>	
03/01/79-10/31/81	FY83: TOTAL: \$107,333	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Drake, M. J.	HQ-EL/Quaide, W. L.	32-Geological Sci
<b>NSG 7607</b>	<b>University of Arizona</b>	<b>1238</b>
Laboratory infrared reflectance studies		
<i>Period</i>	<i>Obligations</i>	
05/01/79-07/31/82	FY83: TOTAL: \$62,612	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lebofsky, L.	HQ-EL/Quaide, W. L.	32-Geological Sci
<b>NSG 7634</b>	<b>University of Arizona</b>	<b>1239</b>
Studies of planetary extended atmospheres		
<i>Period</i>	<i>Obligations</i>	
10/01/79-09/30/82	FY83: TOTAL: \$212,652	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, R. A.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Murphy, R. E.	
<b>NAG 5-20</b>	<b>University of Arkansas - Fayetteville</b>	<b>1240</b>
Measurement of soil moisture using remote sensing multisensor transfer techniques		
<i>Period</i>	<i>Obligations</i>	
03/01/80-10/31/82	FY83: TOTAL: \$125,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Halloran, J. W.	GSFC/Schmugge, T.	39-Env Sci, NEC
Heuer, A. H.		

**ARKANSAS**

# **NASA'S UNIVERSITY PROGRAM ARKANSAS (Continued)**

**NAG 9-3 University of Arkansas - Fayetteville 1241**  
Analysis of geological terrain models for determination of optimum SAR sensor configuration and optimum information extraction for exploration of global non-renewable resources

Period	Obligations	
01/21/80-08/31/83	FY83:	TOTAL: \$300,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
MacDonald, H. C.	JSC/Duke, M. B.	32-Geological Sci

**NAGW 296 University of Arkansas - Fayetteville 1242**  
Unequilibrated ordinary chondrites

Period	Obligations	
03/01/82-03/02/84	FY83:	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sears, D. W.	HQ-EL/Taylor, L. A.	32-Geological Sci
	HQ-EL/Quaide, W. L.	

**NAS 8-34502 University of Arkansas - Fayetteville 1243**  
Ascent winds

Period	Obligations	
07/24/81-10/23/83	FY83:	TOTAL: \$65,291
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tubbs, J. D.	MSFC/Smith, O. E.	31-Atmos Sci
	MSFC/Brown, S. C.	

**NAG 2-147 University of Arkansas - Little Rock 1244**  
A feasibility study of the application of an airborne spectrophone instrument for the measurement of aerosol light absorption

Period	Obligations	
12/01/81-04/30/84	FY83: \$10,000	TOTAL: \$39,883
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mazumder, M. K.	ARC/Ragent, B.	31-Atmos Sci
Wilson, J. D.		
McCleod, P. C.		

## **CALIFORNIA**

**NAG 1-71 California Institute of Technology 1245**  
Development of mathematical techniques for assimilation of remote sensing data into atmospheric models

Period	Obligations	
06/01/80-11/30/81	FY83:	TOTAL: \$43,026
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Seinfeld, J. H.	LARC/McDougal, D. S.	31-Atmos Sci
Koda, M.		
Omatu, S.		

**NAG 2-1 California Institute of Technology 1246**  
Submillimeter line astronomy on the NASA 91.5 cm/ airborne telescope

Period	Obligations	
10/01/79-12/31/83	FY83: \$53,904	TOTAL: \$263,580
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Phillips, T. G.	ARC/Haughney, L. C.	11-Astronomy

**NAG 2-125 California Institute of Technology 1247**  
An experimental study of surface precision limits for machined-panel submillimeter dishes

Period	Obligations	
07/15/81-06/30/82	FY83:	TOTAL: \$34,272
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Leighton, R. B.	ARC/Werner, M. W.	11-Astronomy

**NAG 2-194 California Institute of Technology 1248**  
Visualization and control of vortex shedding from a cone at high angles of attack

Period	Obligations	
09/01/82-08/31/84	FY83: \$24,945	TOTAL: \$50,195
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Culick, F. E.	ARC/Peake, D. J.	41-Aero Engr
	ARC/Davis, S.	

**NAG 3-70 California Institute of Technology 1249**  
Non-steady combustion in burners for aircraft gas turbines

Period	Obligations	
06/09/80-03/07/84	FY83:	TOTAL: \$165,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Marble, F. E.	LERC/Tacina, R.	41-Aero Engr
Zukoski, E. E.		
Kubota, T.		

**NAG 3-179 California Institute of Technology 1250**  
Instability of nonuniform flows

Period	Obligations	
08/01/81-11/01/83	FY83:	TOTAL: \$142,195
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Saffman, P. G.	LERC/Durbin, P. A.	29-Math/Computer, NEC

**NAG 3-466 California Institute of Technology 1251**  
Free-surface phenomena under low-and zero-gravity conditions

Period	Obligations	
08/25/83-08/24/84	FY83: \$45,943	TOTAL: \$45,943
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Coles, D.	LERC/Chai, A. T.	41-Aero Engr

**NAG 5-4 California Institute of Technology 1252**  
Research on long exposure observations of extragalactic objects

Period	Obligations	
03/01/80-01/31/84	FY83: \$24,100	TOTAL: \$80,161
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sargent, W. L.	GSFC/Kondo, Y.	11-Astronomy
Malkan, M.		
Gull, T. R.		

**NAG 5-66 California Institute of Technology 1253**  
Observations of selected Jovian atmospheric features

Period	Obligations	
05/26/80-09/30/83	FY83: \$5,700	TOTAL: \$39,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Trauger, J. T.	GSFC/Kondo, Y.	11-Astronomy
Allen, M. A.		
Gladstone, G. R.		



**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAG 5-68 California Institute of Technology 1254**  
Research of the stellar population of normal galaxies  
*Period* *Obligations*  
06/01/80-08/31/83 FY83: \$14,800 TOTAL: \$53,400  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Cohen, J. G. GSFC/Kondo, Y. 11-Astronomy  
Oke, J. B.  
Persson, S. E.

**NAG 5-250 California Institute of Technology 1255**  
Observations of variable type 1 Seyfert galaxies  
*Period* *Obligations*  
07/01/82-12/31/83 FY83: \$9,284 TOTAL: \$23,284  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Oke, J. B. GSFC/Kondo, Y. 11-Astronomy

**NAG 5-315 California Institute of Technology 1256**  
Dynamic interpretations of geoid anomalies  
*Period* *Obligations*  
04/15/83-04/14/84 FY83: \$30,000 TOTAL: \$30,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hager, B. H. GSFC/Welker, J. E. 32-Geological Sci

**NAG 5-337 California Institute of Technology 1257**  
Ultraviolet optical infrared spectrophotometry polarimetry of low-high polarization quasars  
*Period* *Obligations*  
07/01/83-01/31/84 FY83: \$10,300 TOTAL: \$10,300  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Moore, R. L. GSFC/Kondo, Y. 11-Astronomy  
Cohen, M. H.  
Malkan, M. A.

**NAG 8-406 California Institute of Technology 1258**  
HEAO observing time and support of research: Coordinated infrared, optical, ultraviolet, and X-ray observations of high-redshift quasars  
*Period* *Obligations*  
06/15/81-06/07/82 FY83: TOTAL: \$7,612  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sargent, W. L. MSFC/Stone, J. F. 11-Astronomy  
Malkan, M.

**NAG 8-430 California Institute of Technology 1259**  
Near simultaneous observations of OVV quasars  
*Period* *Obligations*  
03/15/82-03/14/84 FY83: TOTAL: \$1,788  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Moore, R. L. MSFC/Stone, J. F. 11-Astronomy

**NAG 8-438 California Institute of Technology 1260**  
Studies of solar gamma-ray bursts  
*Period* *Obligations*  
07/01/82-12/31/83 FY83: TOTAL: \$20,360  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Zirin, H. MSFC/Stone, J. F. 11-Astronomy

**NAG 9-43 California Institute of Technology 1261**  
Geochemical and isotopic investigation of lunar and planetary materials and interplanetary dust  
*Period* *Obligations*  
02/01/83-01/31/84 FY83: \$867,000 TOTAL: \$867,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wasserburg, G. J. JSC/Dietrich, J. W. 32-Geological Sci

**NAG 9-46 California Institute of Technology 1262**  
Application of stable isotope measurement to the origin and history of lunar samples and meteorites  
*Period* *Obligations*  
02/01/83-01/31/84 FY83: \$75,000 TOTAL: \$75,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Epstein, S. JSC/Dietrich, J. W. 12-Chemistry

**NAGW 58 California Institute of Technology 1263**  
Dynamics of planetary atmospheres  
*Period* *Obligations*  
05/01/80-04/30/84 FY83: \$94,868 TOTAL: \$355,134  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fngureoll, A. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NAGW 107 California Institute of Technology 1264**  
Development of InSb detectors for submillimeter astronomy  
*Period* *Obligations*  
11/01/80-11/30/83 FY83: TOTAL: \$266,977  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Phillips, T. G. HQ-EZ/Bogges, N. W. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAGW 138 California Institute of Technology 1265**  
Crustal evolution of Ganymede and Callisto  
*Period* *Obligations*  
01/15/81-01/14/84 FY83: TOTAL: \$44,653  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shoemaker, E. M. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAGW 148 California Institute of Technology 1266**  
Physical and chemical properties of the outer micron of planetary materials  
*Period* *Obligations*  
03/01/81-09/30/82 FY83: TOTAL: \$126,122  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tombrello, T. A. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/Taylor, L. A.

**NAGW 159 California Institute of Technology 1267**  
Measurement of Jovian winds from Voyager images  
*Period* *Obligations*  
03/15/81-04/14/84 FY83: \$80,000 TOTAL: \$160,603  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ingersoll, A. P. HQ-EL/Brinton, H. C. 13-Physics  
HQ-EL/Evans, N.

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAGW 185 California Institute of Technology 1268**  
High pressure cosmochemistry applied to major planetary interiors

Period	Obligations
04/01/81-12/31/83	FY83: \$60,345 TOTAL: \$130,018
Prin. Invest.	NASA Tech. Officer CASE Category
Stevenson, D. J.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NAGW 200 California Institute of Technology 1269**  
Studies of the composition at solar energetic particles

Period	Obligations
05/15/81-03/14/84	FY83: \$98,800 TOTAL: \$215,878
Prin. Invest.	NASA Tech. Officer CASE Category
Stone, E. C.	HQ-EL/Quaide, W. L. 32-Geological Sci
Vogt, R. E.	HQ-EL/Mitz, M. A.

**NAGW 202 California Institute of Technology 1270**  
Sputtering processes near Jupiter and Saturn

Period	Obligations
05/15/81-06/14/84	FY83: \$60,000 TOTAL: \$220,000
Prin. Invest.	NASA Tech. Officer CASE Category
Haff, P. K.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NAGW 205 California Institute of Technology 1271**  
Isentropic compression and decompression of outer solar system molecular materials

Period	Obligations
06/01/81-11/30/83	FY83: TOTAL: \$192,086
Prin. Invest.	NASA Tech. Officer CASE Category
Ahrens, T. J.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NAGW 223 California Institute of Technology 1272**  
Sources sinks and variability of Mar's atmospheric water vapor

Period	Obligations
07/01/81-09/30/83	FY83: TOTAL: \$50,723
Prin. Invest.	NASA Tech. Officer CASE Category
Farmer, C. B.	HQ-EL/Murphy, R. E. 31-Atmos Sci

**NAGW 254 California Institute of Technology 1273**  
Photochemical processes in the primitive atmosphere of the Earth

Period	Obligations
10/15/81-10/14/83	FY83: \$25,000 TOTAL: \$71,246
Prin. Invest.	NASA Tech. Officer CASE Category
Yung, Y. L.	HQ-EB/Devincenzi, D. L. 12-Chemistry

**NAGW 255 California Institute of Technology 1274**  
Active region properties basic to the solar cycle

Period	Obligations
02/08/82-11/30/83	FY83: \$30,000 TOTAL: \$84,940
Prin. Invest.	NASA Tech. Officer CASE Category
Martin, S. F.	HQ-EZ/Chipman, E. G. 19-Phys Sci, NEC

**NAGW 257 California Institute of Technology 1275**  
Studies of phase equilibria of meteorites and planetary interiors

Period	Obligations
11/01/81-11/30/83	FY83: \$72,432 TOTAL: \$131,111
Prin. Invest.	NASA Tech. Officer CASE Category
Stolper, E.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NAGW 313 California Institute of Technology 1276**  
Spatial variation in Jovian photochemistry

Period	Obligations
04/01/82-03/31/84	FY83: \$40,683 TOTAL: \$81,453
Prin. Invest.	NASA Tech. Officer CASE Category
Yung, Y. L.	HQ-EL/Brinton, H. C. 31-Atmos Sci
Allen, M.	HQ-EL/Brunk, W. E.

**NAGW 413 California Institute of Technology 1277**  
Photochemical modeling of trace species in the stratosphere and mesosphere

Period	Obligations
01/01/83-03/31/84	FY83: \$105,116 TOTAL: \$105,116
Prin. Invest.	NASA Tech. Officer CASE Category
Yung, Y. L.	HQ-EE/Watson, R. T. 31-Atmos Sci
	HQ-EE/Hilsenrath, E.

**NAGW 450 California Institute of Technology 1278**  
Surface modification of icy satellites by internal processes

Period	Obligations
05/01/83-12/31/83	FY83: \$25,000 TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer CASE Category
Stevenson, D. J.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NAS 2-6556 California Institute of Technology 1279**  
Pioneer 10 and 11 data analysis of the Jovian infrared thermal structures experiment

Period	Obligations
09/17/71-09/30/81	FY83: TOTAL: \$253,742
Prin. Invest.	NASA Tech. Officer CASE Category
Ingersoll, A. P.	ARC/Fimmel, R. O. 11-Astronomy
	ARC/Dyer, J. W.

**NAS 5-20721 California Institute of Technology 1280**  
High energy cosmic rays experiment for international Sun Earth Explorer spacecraft

Period	Obligations
02/07/75-09/30/84	FY83: \$100,726 TOTAL: \$1,938,426
Prin. Invest.	NASA Tech. Officer CASE Category
Stone, E. C.	GSFC/Wales, R. O. 13-Physics

**NAS 5-22965 California Institute of Technology 1281**  
Nimbus G Earth radiation budget sensor support

Period	Obligations
01/27/76-09/30/82	FY83: TOTAL: \$117,591
Prin. Invest.	NASA Tech. Officer CASE Category
Ingersoll, A. P.	GSFC/Cherrix, G. T. 31-Atmos Sci

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAS 5-25451 California Institute of Technology 1282**  
Wide field/planetary camera for space telescope  
*Period* *Obligations*  
01/01/79-02/01/85 FY83: \$1,496,818 TOTAL: \$4,647,754  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Westphal, J. GSFC/White, R. A. 11-Astronomy

**NAS 5-25789 California Institute of Technology 1283**  
Data reduction and analysis of interplanetary monitoring platform (IMP) electron isotope spectrometer experiment  
*Period* *Obligations*  
03/24/80-09/30/84 FY83: \$70,994 TOTAL: \$325,696  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stone, E. C. GSFC/Wales, R. O. 11-Astronomy

**NAS 5-27226 California Institute of Technology 1284**  
Introplate deformation, stress in the lithosphere and the driving mechanism for plate motions  
*Period* *Obligations*  
06/29/82-07/01/84 FY83: \$49,445 TOTAL: \$94,480  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hager, B. H. GSFC/Mead, G. D. 32-Geological Sci

**NAS 5-27269 California Institute of Technology 1285**  
Definition phase of the science program for a photometric filtergraph for the solar optical telescope (SOT)  
*Period* *Obligations*  
05/26/82-10/26/83 FY83: \$144,000 TOTAL: \$214,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Zirin, H. GSFC/Stouffer, C. 31-Atmos Sci

**NAS 8-27978 California Institute of Technology 1286**  
Design, development and operation of the ACR-7 heavy nuclei experiment under the HEAO program  
*Period* *Obligations*  
06/23/72-09/30/84 FY83: \$329,200 TOTAL: \$1,521,392  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stone, E. C. MSFC/Stone, J. F. 11-Astronomy  
Vogt, R. E. MSFC/Lusk, J. L.

**NAS 8-33108 California Institute of Technology 1287**  
Research in turbomachine rotor forces  
*Period* *Obligations*  
10/23/78-08/29/84 FY83: \$122,024 TOTAL: \$548,639  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Acosta, A. J. MSFC/Gross, L. A. 46-Mech Engr  
Brennen, C. MSFC/Garcia, F. F.  
Caughey, T. K.

**NAS 8-33352 California Institute of Technology 1288**  
An SSS observation of the supernova remnant RCW 103  
*Period* *Obligations*  
05/30/79-10/31/81 FY83: TOTAL: \$2,720  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Garmire, G. P. MSFC/Jones, J. B., Jr. 11-Astronomy  
Tuohy, I. R.

**NASW 3752 California Institute of Technology 1289**  
Orbiting dynamic compression laboratory  
*Period* *Obligations*  
03/24/83-10/31/83 FY83: \$25,018 TOTAL: \$25,018  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ahrens, T. J. HQ-MF/Holt, S. S. 41-Aero Engr  
HQ-MF/Pritchard, E. B.

**NCA 2-90101 California Institute of Technology 1290**  
A study of the short wavelength performance of a large aperture space telescope  
*Period* *Obligations*  
06/01/81-06/30/84 FY83: TOTAL: \$15,728  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Soifer, B. T. ARC/Werner, M. W. 11-Astronomy  
Matthews, K. Y.  
Neugebauer, G.

**NCA 2-90201 California Institute of Technology 1291**  
Millimeter wavelength observations of galactic and extra galactic astronomical sources  
*Period* *Obligations*  
01/01/82-06/30/84 FY83: \$4,800 TOTAL: \$7,920  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Neugebauer, G. ARC/Werner, M. W. 11-Astronomy  
Soifer, B. T. ARC/Roellig, T. P.

**NCA 2-90301 California Institute of Technology 1292**  
Analysis of Voyager images of Saturn's rings and interpretation by numerical modeling of ring dynamics  
*Period* *Obligations*  
01/01/83-06/30/83 FY83: \$11,700 TOTAL: \$11,700  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goldreich, P. ARC/Cuzzi, J. N. 31-Atmos Sci  
Borderies, N.

**NCC 2-122 California Institute of Technology 1293**  
Stability and sensitivity analysis of life support systems  
*Period* *Obligations*  
02/01/81-10/31/82 FY83: TOTAL: \$27,222  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stephanopoulos, A.G.N. ARC/MacElroy, R. D. 51-Biological Sci

**NGL 05-002-003 California Institute of Technology 1294**  
Basic scientific research on lunar and planetary exploration  
*Period* *Obligations*  
12/01/59-12/31/83 FY83: \$199,711 TOTAL: \$3,860,904  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Muhleman, D. O. HQ-EL/Brunk, W. E. 11-Astronomy  
HQ-EL/Brinton, H. C.

**NGL 05-002-034 California Institute of Technology 1295**  
Research in solar flares and the solar atmosphere  
*Period* *Obligations*  
05/18/65-10/31/83 FY83: \$190,713 TOTAL: \$3,740,066  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Zirin, H. HQ-EZ/Chipman, E. G. 11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

<b>NGL 05-002-105 California Institute of Technology 1296</b>			
Shock effects in minerals			
<i>Period</i>	<i>Obligations</i>		
08/16/68-03/31/84	FY83: \$180,000 TOTAL: \$1,740,093		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mazur, V.	HQ-EL/Quaide, W. L.	32-Geological Sci	
Rust, W. D.	HQ-EL/French, B. M.		
Sasaki, Y.			
<b>NGL 05-002-134 California Institute of Technology 1297</b>			
Modern astronomical instrument development			
<i>Period</i>	<i>Obligations</i>		
10/27/69-04/29/84	FY83: \$60,982 TOTAL: \$940,628		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Oke, J. B.	HQ-EZ/Weiler, E. J.	11-Astronomy	
	HQ-EZ/Bogges, N. W.		
<b>NGL 05-002-140 California Institute of Technology 1298</b>			
Research in planetary astronomy			
<i>Period</i>	<i>Obligations</i>		
04/11/69-03/31/84	FY83: \$50,230 TOTAL: \$697,358		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Soifer, B. T.	HQ-EL/Brunk, W. E.	11-Astronomy	
	HQ-EL/Murphy, R. E.		
<b>NGL 05-002-188 California Institute of Technology 1299</b>			
Lunar sample analysis			
<i>Period</i>	<i>Obligations</i>		
02/03/71-01/31/84	FY83: TOTAL: \$7,094,958		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wasserburg, G. J.	JSC/Dietrich, J. W.	12-Chemistry	
<b>NGL 05-002-190 California Institute of Technology 1300</b>			
Lunar sample analysis			
<i>Period</i>	<i>Obligations</i>		
01/19/71-05/31/83	FY83: TOTAL: \$1,102,645		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Epstein, S.	JSC/Dietrich, J. W.	13-Physics	
<b>NGL 05-002-207 California Institute of Technology 1301</b>			
Research in infrared and X-ray astronomy			
<i>Period</i>	<i>Obligations</i>		
02/18/71-09/30/82	FY83: TOTAL: \$1,071,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Neugebauer, G.	HQ-EZ/Bogges, N. W.	11-Astronomy	
	HQ-EZ/Weiler, E. J.		
<b>NGL 05-002-338 California Institute of Technology 1302</b>			
Petrologic and microprobe investigations on isotopically dated lunar samples			
<i>Period</i>	<i>Obligations</i>		
02/01/74-01/31/84	FY83: TOTAL: \$622,422		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Albee, A. L.	JSC/Dietrich, J. W.	13-Physics	
<b>NGR 05-002-114 California Institute of Technology 1303</b>			
Radio interferometer of Mars and Venus			
<i>Period</i>	<i>Obligations</i>		
10/11/68-09/30/83	FY83: TOTAL: \$622,608		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Muhleman, D. O.	HQ-EL/Brunk, W. E.	11-Astronomy	
	HQ-EL/Murphy, R. E.		
<b>NGR 05-002-160 California Institute of Technology 1304</b>			
Research in particles and fields			
<i>Period</i>	<i>Obligations</i>		
10/27/69-09/30/83	FY83: \$630,320 TOTAL: \$5,280,320		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Vogt, R. E.	HQ-EZ/Opp, A. G.	11-Astronomy	
	HQ-EZ/Kaluzienski, L. J.		
<b>NGR 05-002-333 California Institute of Technology 1305</b>			
Lunar sample analysis			
<i>Period</i>	<i>Obligations</i>		
02/01/74-05/31/82	FY83: TOTAL: \$658,074		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Tombrello, T. A.	JSC/Dietrich, J. W.	13-Physics	
<b>NGT 05-002-800 California Institute of Technology 1306</b>			
Graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
06/01/81-05/31/84	FY83: \$12,000 TOTAL: \$32,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Phillips, T. G.	HQ-LB/Owens, F. C.	13-Physics	
<b>NGT 05-003-790 California Institute of Technology 1307</b>			
Summer research program faculty fellowships			
<i>Period</i>	<i>Obligations</i>		
01/01/79-03/31/84	FY83: \$224,070 TOTAL: \$860,046		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ashkenas, H.	HQ-LB/Owens, F. C.	49-Engr, NEC	
<b>NSG 1483 California Institute of Technology 1308</b>			
Low speed impact damage on composite materials			
<i>Period</i>	<i>Obligations</i>		
01/15/78-01/14/84	FY83: \$52,310 TOTAL: \$266,632		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Knauss, W. G.	LARC/Starns, J. H., Jr.	41-Aero Engr	
Babcock, C. D.			
<b>NSG 5301 California Institute of Technology 1309</b>			
Research in atmospheric chemistry and transport			
<i>Period</i>	<i>Obligations</i>		
09/15/78-01/14/82	FY83: TOTAL: \$77,504		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Yung, Y. L.	GSFC/Hansen, J. E.	31-Atmos Sci	
<b>NSG 5381 California Institute of Technology 1310</b>			
Support of research involving International Ultraviolet Experiment (IUE) satellite			
<i>Period</i>	<i>Obligations</i>		
07/01/79-09/30/81	FY83: TOTAL: \$15,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Greenstein, J. L.	GSFC/Bogges, A.	11-Astronomy	

**NASA'S UNIVERSITY PROGRAM  
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**NSG 7129 California Institute of Technology 1311**  
Relationship of impact cratering to the evolution of the lunar surface  
*Period* *Obligations*  
04/01/75-01/31/84 FY83: \$75,834 TOTAL: \$513,494  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ahrens, T. J. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NSG 7202 California Institute of Technology 1312**  
Laboratory partitioning studies relevant to the interpretation of lunar and meteoritic trace element data  
*Period* *Obligations*  
02/01/76-02/28/84 FY83: \$85,448 TOTAL: \$588,530  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Burnett, D. S. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NSG 7376 California Institute of Technology 1313**  
Photochemistry of the Jovian planets and their satellites  
*Period* *Obligations*  
11/01/77-11/30/84 FY83: \$117,000 TOTAL: \$335,172  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Yung, Y. L. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NSG 7610 California Institute of Technology 1314**  
Fundamental studies in geodynamics  
*Period* *Obligations*  
08/01/79-07/31/84 FY83: \$125,000 TOTAL: \$560,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Anderson, D. L. HQ-EL/Tuyahov, A. J. 32-Geological Sci  
Hager, B. H.  
Kanamori, H.

**NSG 9019 California Institute of Technology 1315**  
Shock compression measurements on lunar samples  
*Period* *Obligations*  
10/01/74-05/31/82 FY83: TOTAL: \$395,100  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ahrens, T. J. JSC/Dietrich, J. W. 19-Phys Sci, NEC

**NAG 2-49 California Polytechnic State U - Pomona 1316**  
Development of a small-scale V/STOL propulsion simulator for modelling ground effect fields  
*Period* *Obligations*  
08/01/80-05/31/84 FY83: \$21,480 TOTAL: \$73,820  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lord, P. A. ARC/Christianson, R. S. 41-Aero Engr  
ARC/Eshleman, J. E.

**NAG 2-61 California Polytechnic State U-San Luis 1317**  
Experimental investigation of control concepts for buoyant hybrid airships using a small scale flying model  
*Period* *Obligations*  
08/29/80-02/28/84 FY83: TOTAL: \$52,205  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sandlin, D. R. ARC/Talbot, P. D. 41-Aero Engr

**NAG 4-4 California Polytechnic State U-San Luis 1318**  
The feasibility of thrust measurement during flight  
*Period* *Obligations*  
06/01/80-10/31/83 FY83: \$28,442 TOTAL: \$47,340  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Carpenter, T. W. DFRF/Myers, L. P. 41-Aero Engr  
DFRF/Burchman, F. W.

**NAG 4-7 California Polytechnic State U-San Luis 1319**  
Wind tunnel test of energy efficient livestock hauler having improved ventilation and temperature control  
*Period* *Obligations*  
04/01/81-07/31/83 FY83: TOTAL: \$22,506  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sandlin, D. R. DFRF/Saltzman, E. J. 49-Engr, NEC

**NAS 2-10364 California Polytechnic State U-San Luis 1320**  
Software development and application for dynamic analysis of the tilt rotor research aircraft  
*Period* *Obligations*  
09/04/79-09/30/84 FY83: \$95,525 TOTAL: \$324,927  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Grimes, J. E. ARC/Magee, J. P. 41-Aero Engr

**NCA 2-678101 California Polytechnic State U-San Luis 1321**  
AD-2000 interactive graphic system tutorial  
*Period* *Obligations*  
10/01/80-09/30/83 FY83: TOTAL: \$19,644  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Morgan, D. E. ARC/Piazza, J. E. 22-Computer Science

**NCC 2-226 California Polytechnic State U-San Luis 1322**  
Validation of an existing panelling method  
*Period* *Obligations*  
10/01/82-09/30/84 FY83: \$39,957 TOTAL: \$39,957  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sandlin, D. R. ARC/Corsiglia, V. R. 41-Aero Engr

**NCC 2-236 California Polytechnic State U-San Luis 1323**  
Use of the ACSYNT program for the preliminary investigation of selected aircraft  
*Period* *Obligations*  
01/01/83-12/31/84 FY83: \$36,907 TOTAL: \$36,907  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sandlin, D. R. ARC/Wilson, S. B. 41-Aero Engr

**NCC 2-239 California Polytechnic State U-San Luis 1324**  
Velocity and turbulence profiles for a two dimensional simulation of vanes for the arc 80 ft by 120 ft. Wind tunnel  
*Period* *Obligations*  
03/28/83-06/30/83 FY83: \$4,946 TOTAL: \$4,946  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hoffmann, J. A. ARC/Dudley, M. R. 41-Aero Engr

**NCC 2-255 California Polytechnic State U-San Luis 1325**  
The use of powered lift on swept forward wings  
*Period* *Obligations*  
07/01/83-12/31/84 FY83: \$31,444 TOTAL: \$31,444  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sandlin, D. R. ARC/Koenig, D. G. 41-Aero Engr  
Scheib, J.

**NASA'S UNIVERSITY PROGRAM  
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**NCC 2-258 California Polytechnic State U-San Luis 1326**  
Selection of a prediction program to predict fixed wing flight conditions for the RSRA

Period	Obligations	
07/01/83-12/31/84	FY83: \$32,675	TOTAL: \$32,675
Prin. Invest.	NASA Tech. Officer	CASE Category
Sandlin, D. R.	ARC/Snyder, W. J.	41-Aero Engr
	ARC/Erickson, R.	

**NCC 2-259 California Polytechnic State U-San Luis 1327**  
Wing downloads generated by rotor wash in hover

Period	Obligations	
07/01/83-03/31/85	FY83: \$33,299	TOTAL: \$33,299
Prin. Invest.	NASA Tech. Officer	CASE Category
Sandlin, D. R.	ARC/Schroers, L. G.	41-Aero Engr
Jordan, D.	ARC/Maisel, M. D.	

**NCC 4-1 California Polytechnic State U-San Luis 1328**  
Cal Poly graduate student program

Period	Obligations	
10/01/79-09/30/84	FY83: \$28,205	TOTAL: \$218,245
Prin. Invest.	NASA Tech. Officer	CASE Category
Sandlin, D. R.	DFRF/Washington, H. P.	41-Aero Engr

**NSG 2391 California Polytechnic State U-San Luis 1329**  
Delay of separation with free stream turbulence

Period	Obligations	
08/01/79-12/31/83	FY83: \$31,398	TOTAL: \$111,142
Prin. Invest.	NASA Tech. Officer	CASE Category
Hoffmann, J. A.	ARC/Koenig, D. G.	41-Aero Engr
	ARC/Aoyagi, K.	

**NAS 3-22172 California State University - Chico 1330**  
Operation of the LERC visitor information center

Period	Obligations	
10/01/79-09/30/84	FY83: \$448,776	TOTAL: \$1,340,274
Prin. Invest.	NASA Tech. Officer	CASE Category
Lewis, M. R.	LERC/Bondurant, L.	99-Multi-Discip

**NCA 2-251301 California State University - Fresno 1331**  
Design of fault-tolerant systems using performance monitors

Period	Obligations	
09/01/83-05/31/84	FY83: \$28,042	TOTAL: \$28,042
Prin. Invest.	NASA Tech. Officer	CASE Category
Heaney, A. A.	ARC/Lim, R. S.	22-Computer Science

**NAG 9-57 California State University - Fullerton 1332**  
Meteoritic trace element microdistributions

Period	Obligations	
03/01/83-02/29/84	FY83: \$41,500	TOTAL: \$41,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Woolum, D. S.	JSC/Dietrich, J. W.	13-Physics

**NCA 2-253901 California State University - Fullerton 1333**  
Absorption by SO<sub>2</sub> in the near UV and visible spectral regions with applications to Venus' atmosphere

Period	Obligations	
06/15/79-09/15/83	FY83:	TOTAL: \$15,189
Prin. Invest.	NASA Tech. Officer	CASE Category
Nanes, R.	ARC/Roese, R. W.	13-Physics

**NSG 7314 California State University - Fullerton 1334**  
Meteoritic bismuth and Lead-208 micro distributions

Period	Obligations	
02/01/77-02/28/84	FY83:	TOTAL: \$216,651
Prin. Invest.	NASA Tech. Officer	CASE Category
Woolum, D. S.	HQ-EL/Taylor, L. A.	32-Geological Sci
	HQ-EL/Quaide, W. L.	

**NSG 7614 California State University - Fullerton 1335**  
Atmospheric dynamics from Viking Lander data

Period	Obligations	
08/01/79-05/31/84	FY83: \$21,000	TOTAL: \$106,739
Prin. Invest.	NASA Tech. Officer	CASE Category
Ryan, J. A.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NCC 2-223 California State Univ.- Hayward 1336**  
Limits of dual response generation in flight control

Period	Obligations	
12/01/82-07/31/84	FY83: \$64,084	TOTAL: \$64,084
Prin. Invest.	NASA Tech. Officer	CASE Category
Klapp, S. T.	ARC/Hartzell, E. J.	69-Psych, NEC

**NAG 2-204 California State University - Long Beach 1337**  
Second symposium on numerical and physical aspects of aerodynamic flows

Period	Obligations	
10/01/82-03/31/83	FY83: \$9,975	TOTAL: \$9,975
Prin. Invest.	NASA Tech. Officer	CASE Category
Cebeci, T.	ARC/Peterson, V. L.	41-Aero Engr
	ARC/Tindle, E. L.	

**NAG 3-20 California State University - Long Beach 1338**  
Gear lubrication and cooling study

Period	Obligations	
01/01/80-03/27/84	FY83: \$54,034	TOTAL: \$207,225
Prin. Invest.	NASA Tech. Officer	CASE Category
Akin, L.	LERC/Townsend, D. P.	46-Mech Engr
Unt, H.		

**NAS 1-17312 California State University - Long Beach 1339**  
Evaluation of several approaches used in interpreting flows

Period	Obligations	
03/29/83-12/14/83	FY83: \$8,670	TOTAL: \$8,670
Prin. Invest.	NASA Tech. Officer	CASE Category
Cebeci, T.	LARC/Bushnell, D. M.	41-Aero Engr
	LARC/Hefner, J. N.	

**NCA 2-382001 California State University - Long Beach 1340**  
Experimental investigation of velocity biasing in laser Doppler anemometer measurements

Period	Obligations	
03/17/80-12/31/81	FY83:	TOTAL: \$35,178
Prin. Invest.	NASA Tech. Officer	CASE Category
Modarress, D.	ARC/Johnson, D. A.	46-Mech Engr

# **NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)**

## **NAG 3-73 California State University - Los Angeles 1341**

Electrostatic fuel conditioning of internal combustion engines

<i>Period</i>	<i>Obligations</i>	
06/15/80-06/15/82	FY83: TOTAL: \$35,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gold, P. I.	LERC/McFadden, J. J.	46-Mech Engr
Kovacs, A. J.		

## **NSG 2199 California State University - Los Angeles 1342**

Biochemical and structural studies on the thermal resistance of 'hardy' bacterial spores

<i>Period</i>	<i>Obligations</i>	
01/01/77-12/31/82	FY83: TOTAL: \$88,735	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yavarkovsky, J. H.	ARC/Hochstein, L. I.	51-Biological Sci

## **NAG 2-255 California State University - Northridge 1343**

Space station habitability

<i>Period</i>	<i>Obligations</i>	
08/01/83-09/30/83	FY83: \$16,498 TOTAL: \$16,498	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bluth, B. J.	ARC/Tanner, T. A.	79-Soc Sci, NEC

## **NCA 2-554301 California State University - Northridge 1344**

Analog simulation of flux summing servo model

<i>Period</i>	<i>Obligations</i>	
12/01/82-09/30/84	FY83: \$44,000 TOTAL: \$44,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hriber, E. J.	ARC/Shih, K. C.	41-Aero Engr
	ARC/Brockner, D. H.	

## **NGT 05-062-800 California State University - Northridge 1345**

NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
05/01/83-04/30/84	FY83: \$10,400 TOTAL: \$10,400	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Adams, H.	HQ-LB/Owens, F. C.	32-Geological Sci

## **NSG 5330 California State University - Northridge 1346**

Research of active regions on the solar constant

<i>Period</i>	<i>Obligations</i>	
02/01/79-09/30/82	FY83: TOTAL: \$30,544	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chapman, G. A.	GSFC/Wende, C.	31-Atmos Sci

## **NSG 5333 California State University - Northridge 1347**

Broad spectrum of magnetic, velocity and spectral data

<i>Period</i>	<i>Obligations</i>	
02/01/79-11/30/82	FY83: TOTAL: \$95,171	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chapman, G. A.	GSFC/Wende, C.	31-Atmos Sci

## **NCC 2-31 De Anza College 1348**

Optimization of an interactive distributive computer network for planetary and infrared scientific research applications

<i>Period</i>	<i>Obligations</i>	
10/01/79-12/31/83	FY83: \$69,292 TOTAL: \$194,548	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Frederick, V.	ARC/Lum, H.	49-Engr, NEC

## **NAG 2-240 Harvey Mudd College 1349**

Dynamic analysis of aircraft structures

<i>Period</i>	<i>Obligations</i>	
06/20/83-06/19/84	FY83: \$55,000 TOTAL: \$55,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	ARC/Gupta, K. K.	41-Aero Engr
	ARC/Knight, R. J.	

## **NCA 2-283201 Harvey Mudd College 1350**

Development of low-cost simulation technology for high resolution radar displays

<i>Period</i>	<i>Obligations</i>	
09/01/82-10/01/83	FY83: \$22,473 TOTAL: \$29,473	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Phillips, J. R.	ARC/Clary, G. R.	41-Aero Engr

## **NCA 2-283301 Harvey Mudd College 1351**

Adaptation of the Harvey Mudd College MATHLIB software for Ames applications

<i>Period</i>	<i>Obligations</i>	
11/01/82-10/31/83	FY83: \$5,000 TOTAL: \$5,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilde, D. U.	ARC/Clary, G. R.	22-Computer Science

## **NCA 2-283302 Harvey Mudd College 1352**

Free vibration and flutter analysis of X-29A aircraft: Utilization, maintenance, and enhancement of 'STARS' computer program

<i>Period</i>	<i>Obligations</i>	
11/15/82-02/15/84	FY83: \$38,434 TOTAL: \$38,434	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	ARC/Gupta, K. K.	22-Computer Science

## **NCA 2-283303 Harvey Mudd College 1353**

Development of numerical finite element techniques for dynamic analysis of spinning structures

<i>Period</i>	<i>Obligations</i>	
06/01/83-05/31/84	FY83: \$40,000 TOTAL: \$40,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	ARC/Gupta, K. K.	22-Computer Science

## **NCA 2-283304 Harvey Mudd College 1354**

Investigation of seismicity and related effects at construction sites at NASA Dryden Flight Research Center

<i>Period</i>	<i>Obligations</i>	
08/25/83-02/15/84	FY83: \$10,000 TOTAL: \$10,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	DFRF/Anderson, K. F.	32-Geological Sci

## **NSG 4029 Harvey Mudd College 1355**

Study for the enhancement of a structural analysis routine (STARS) program

<i>Period</i>	<i>Obligations</i>	
08/16/82-11/16/82	FY83: TOTAL: \$4,674	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	DFRF/Gupta, K. K.	41-Aero Engr
	DFRF/Knight, R. J.	

**NASA'S UNIVERSITY PROGRAM  
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**NGT 05-060-800 Humboldt State University 1356**  
Graduate student researchers program

Period	Obligations
09/01/81-08/31/82	FY83: TOTAL: \$11,000
Prin. Invest.	NASA Tech. Officer CASE Category
Fox, L., III	HQ-LB/Carter, C. H. 39-Env Sci, NEC

**NAGW 250 San Diego State University 1363**  
Sulfur in the clouds of Venus

Period	Obligations
10/01/81-10/31/83	FY83: \$28,000 TOTAL: \$55,997
Prin. Invest.	NASA Tech. Officer CASE Category
Young, A. T.	HQ-EL/Brinton, H. C. 31-Atmos Sci
	HQ-EL/Brunk, W. E.

**NGT 05-078-800 Loma Linda University 1357**  
NASA graduate student researchers program

Period	Obligations
06/01/83-05/31/84	FY83: \$15,000 TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer CASE Category
Linkhart, T. A.	HQ-LB/Owens, F. C. 51-Biological Sci

**NAGW 319 San Diego State University 1364**  
Photoabsorption and photodissociation of molecules important in the interstellar medium

Period	Obligations
05/15/82-06/14/84	FY83: \$57,252 TOTAL: \$117,127
Prin. Invest.	NASA Tech. Officer CASE Category
Lee, L.	HQ-EZ/Stencel, R. E. 11-Astronomy
	HQ-EZ/Weiler, E. J.

**NAG 1-275 San Diego State University 1358**  
Multiobjective optimization and dynamic systems with uncertain parameters and stochastic process

Period	Obligations
06/01/82-07/15/83	FY83: TOTAL: \$29,475
Prin. Invest.	NASA Tech. Officer CASE Category
Rao, S. S.	LARC/Schy, A. A. 29-Math/Cmputer, NEC
	LARC/Armstrong, E. S.

**NAG 8-385 San Francisco State University 1365**  
Evolution of FE abundance in clusters of galaxies

Period	Obligations
12/01/80-11/30/82	FY83: TOTAL: \$7,228
Prin. Invest.	NASA Tech. Officer CASE Category
Lea, S.	MSFC/Stone, J. F. 11-Astronomy

**NAG 2-104 San Diego State University 1359**  
Measurement of temperature and density fluctuations in turbulence using an ultraviolet laser

Period	Obligations
03/01/81-04/30/84	FY83: \$39,933 TOTAL: \$119,891
Prin. Invest.	NASA Tech. Officer CASE Category
Massey, G. A.	ARC/McKenzie, R. L. 19-Phys Sci, NEC

**NAG 8-418 San Francisco State University 1366**  
Theoretical investigation of the Butcher-Oemler effect

Period	Obligations
07/27/81-01/27/84	FY83: TOTAL: \$7,491
Prin. Invest.	NASA Tech. Officer CASE Category
Lea, S. M.	MSFC/Stone, J. F. 11-Astronomy

**NAG 8-356 San Diego State University 1360**  
Proposal to observe with the High Energy Astronomical Observatory-B observatory

Period	Obligations
06/27/80-06/27/83	FY83: TOTAL: \$7,490
Prin. Invest.	NASA Tech. Officer CASE Category
Young, A.	MSFC/Swearingen, J. C. 11-Astronomy
Vanburen, D.	

**NAG 8-443 San Francisco State University 1367**  
Investigation of the X-ray structure and evolution of clusters of galaxies using X-ray observations from the high energy astrophysical observatories

Period	Obligations
10/01/82-09/30/83	FY83: \$14,632 TOTAL: \$14,632
Prin. Invest.	NASA Tech. Officer CASE Category
Lea, S. M.	MSFC/Stone, J. F. 11-Astronomy

**NAGW 184 San Diego State University 1361**  
Calculate transmission of CO2 in the atmosphere of Venus

Period	Obligations
05/01/81-05/31/84	FY83: \$31,990 TOTAL: \$94,970
Prin. Invest.	NASA Tech. Officer CASE Category
Young, L.	HQ-EL/Brinton, H. C. 31-Atmos Sci
	HQ-EL/Brunk, W. E.

**NAGW 94 San Francisco State University 1368**  
Ternary coordination complexes of metals with 5' nucleotides and amino acids in a clay environment

Period	Obligations
07/01/80-09/30/82	FY83: TOTAL: \$86,179
Prin. Invest.	NASA Tech. Officer CASE Category
Orenberg, J. B.	HQ-EB/Devincenzi, D. L. 12-Chemistry

**NAGW 230 San Diego State University 1362**  
Mechanism of geotropic curvature in plant shoots

Period	Obligations
07/01/81-09/30/83	FY83: TOTAL: \$83,374
Prin. Invest.	NASA Tech. Officer CASE Category
Rayle, D.	HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 324 San Francisco State University 1369**  
Soluble minerals as prebiotic surfaces for absorption and condensation of biomolecules

Period	Obligations
05/01/82-06/30/84	FY83: \$86,235 TOTAL: \$161,235
Prin. Invest.	NASA Tech. Officer CASE Category
Orenberg, J. B.	HQ-EB/Devincenzi, D. L. 12-Chemistry
Lahav, N.	HQ-EB/Rambler, M. B.



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**NCA 2-660102 San Francisco State University 1370**  
Soluble salts and the origins of life  
*Period Obligations*  
07/01/81-01/31/82 FY83: TOTAL: \$10,306  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Orenberg, J. B. ARC/Lawless, J. B. 12-Chemistry

**NCA 2-660103 San Francisco State University 1371**  
Blood pressure control in endurance-trained athletes  
*Period Obligations*  
09/01/81-08/31/83 FY83: \$25,000 TOTAL: \$59,882  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Barnes, P. R. ARC/Greenleaf, J. E. 51-Biological Sci

**NCA 2-660201 San Francisco State University 1372**  
Joint use of resources for operation of the NASA-Ames university consortium office  
*Period Obligations*  
10/01/81-10/31/82 FY83: TOTAL: \$103,472  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Eisenberg, L. ARC/Tomberlin, K. A. 99-Multi-Discip  
Heidtmann, R. W.

**NCA 2-660301 San Francisco State University 1373**  
Joint use of resources for operation of the NASA Ames university consortium office  
*Period Obligations*  
11/01/82-10/31/83 FY83: \$113,383 TOTAL: \$113,383  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Eisenberg, L. ARC/Tomberlin, K. A. 99-Multi-Discip  
Heidtmann, R. W.

**NCA 2-660302 San Francisco State University 1374**  
Carbon and nitrogen biogeochemistry in the ocean: A study using stable isotope natural abundance  
*Period Obligations*  
08/01/83-07/31/84 FY83: \$15,000 TOTAL: \$15,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Rau, G. H. ARC/Desmarais, D. J. 59-Life Sci, NEC

**NCA 2-660303 San Francisco State University 1375**  
Study of stellar mass-loss processes by the large deployable reflector: Science rationale and technological requirements  
*Period Obligations*  
08/01/83-10/17/83 FY83: \$7,946 TOTAL: \$7,946  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Tielens, A. ARC/Hollenbach, D. 11-Astronomy

**NCC 2-32 San Francisco State University 1376**  
Studies in origin-of life research search for extra-terrestrial intelligence  
*Period Obligations*  
11/01/79-09/14/83 FY83: TOTAL: \$381,960  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Seeger, C. L. ARC/Billingham, J. 59-Life Sci, NEC  
ARC/Wolfe, J. M.

**NCC 2-214 San Francisco State University 1377**  
Origin and prevalence of life in the universe  
*Period Obligations*  
10/01/82-10/31/83 FY83: \$261,870 TOTAL: \$261,870  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Seeger, C. L. ARC/Billingham, J. 59-Life Sci, NEC  
ARC/Wolfe, J. H.

**NSG 7512 San Francisco State University 1378**  
Smectite clays in Mars soil: Evidence for their presence and role in Viking biology experiments  
*Period Obligations*  
10/01/78-03/30/84 FY83: \$12,980 TOTAL: \$188,922  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Orenberg, J. B. HQ-EB/Devincenzi, D. L. 12-Chemistry  
Banin, A. HQ-EB/Rambler, G.

**NAG 2-84 San Jose State University 1379**  
Automaticity and skill acquisition in a dual-task environment  
*Period Obligations*  
10/01/80-02/28/83 FY83: TOTAL: \$59,095  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Regan, J. E. ARC/Curry, R. E. 69-Psych, NEC  
Plant, W. T.

**NAG 2-85 San Jose State University 1380**  
Application of surface acoustic wave devices to radio telemetry  
*Period Obligations*  
01/01/81-09/30/82 FY83: TOTAL: \$6,387  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Strasilla, U. ARC/Deboo, G. J. 45-Elec Engr

**NAG 2-99 San Jose State University 1381**  
External thermal protection coating systems  
*Period Obligations*  
10/01/80-12/31/83 FY83: \$43,027 TOTAL: \$100,483  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Mayer, L. A. ARC/Mansfield, J. A. 49-Engr, NEC

**NAG 2-215 San Jose State University 1382**  
Microprocessor controlled adaptive filters  
*Period Obligations*  
12/01/82-12/31/83 FY83: \$15,483 TOTAL: \$15,483  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Strasilla, U. ARC/Deboo, G. J. 22-Computer Science

**NCA 2-675002 San Jose State University 1383**  
A self-report method for motion sickness assessment in the squirrel monkey: Its use in habituation and sensory conflict studies  
*Period Obligations*  
01/01/80-10/31/82 FY83: TOTAL: \$61,633  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ginsberg, R. ARC/Daunton, N. G. 51-Biological Sci

**NCA 2-675003 San Jose State University 1384**  
Early evolution of the cyanophyta  
*Period Obligations*  
01/21/80-01/20/82 FY83: TOTAL: \$33,312  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Weaver, E. C. ARC/Klein, H. P. 54-Env Biology

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**NCA 2-675004 San Jose State University 1385**  
Investigation of mitochondria as a means to determine the effects of space weightlessness on the aging process of drosophila

<i>Period</i>	<i>Obligations</i>	
04/01/80-03/31/82	FY83:	TOTAL: \$51,248
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yengoyan, L. S.	ARC/Miquel, J.	12-Chemistry

**NCA 2-675009 San Jose State University 1386**  
Measures of vestibular function and emesis in animal candidates for flight experimentation

<i>Period</i>	<i>Obligations</i>	
07/01/80-06/30/82	FY83:	TOTAL: \$18,228
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fox, R. A.	ARC/Daunton, N. G.	61-Biol Aspects

**NCA 2-675102 San Jose State University 1387**  
Analysis of flight loads measurement systems of the rotor systems research aircraft

<i>Period</i>	<i>Obligations</i>	
05/01/81-04/30/82	FY83:	TOTAL: \$29,996
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Agarwal, R. B.	ARC/Acree, C. W.	41-Aero Engr

**NCA 2-675103 San Jose State University 1388**  
Research problems in space and planetary biology, biotechnology, life support, and the origin of life

<i>Period</i>	<i>Obligations</i>	
06/15/81-06/14/83	FY83:	TOTAL: \$31,240
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Holley, D. C.	ARC/Deal, P. H.	59-Life Sci, NEC

**NCA 2-675201 San Jose State University 1389**  
Preliminary structural design analysis of high aspect ratio wings for transport aircraft

<i>Period</i>	<i>Obligations</i>	
10/01/81-10/31/83	FY83: \$29,065	TOTAL: \$66,945
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wang, J. C.	ARC/Miura, H.	41-Aero Engr

**NCA 2-675202 San Jose State University 1390**  
Studies on a blue-green alga capable of anoxygenic photosynthesis

<i>Period</i>	<i>Obligations</i>	
01/25/82-01/24/84	FY83: \$25,088	TOTAL: \$46,088
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Weaver, E. C.	ARC/Klein, H. P.	51-Biological Sci
	ARC/Lawless, J. G.	

**NCA 2-675204 San Jose State University 1391**  
Wet oxidation for waste treatment in a CELSS

<i>Period</i>	<i>Obligations</i>	
04/01/82-10/31/82	FY83:	TOTAL: \$1,200
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Spitze, L. A.	ARC/Wydeven, T.	12-Chemistry

**NCA 2-675301 San Jose State University 1392**  
Shock tunnel simulation of hypersonic low-density flows

<i>Period</i>	<i>Obligations</i>	
10/01/82-08/31/83	FY83: \$23,701	TOTAL: \$23,701
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Desautel, R.	ARC/Nachtsheim, P.	46-Mech Engr

**NCA 2-675302 San Jose State University 1393**  
Graphic analysis of computed three-dimensional viscous flow fields

<i>Period</i>	<i>Obligations</i>	
11/01/82-06/03/83	FY83: \$6,041	TOTAL: \$6,041
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Phillips, V. L.	ARC/Deiwert, G. S.	22-Computer Science

**NCA 2-675303 San Jose State University 1394**  
Research problems in space and planetary biology, biotechnology, life support, and the origin of life

<i>Period</i>	<i>Obligations</i>	
06/15/83-06/14/85	FY83: \$11,000	TOTAL: \$11,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Holley, D. C.	ARC/Jahnke, L. L.	59-Life Sci, NEC

**NCA 2-675304 San Jose State University 1395**  
Carbon fiber surface modification and characterization

<i>Period</i>	<i>Obligations</i>	
04/01/83-03/31/85	FY83: \$21,302	TOTAL: \$25,140
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kellman, R.	ARC/Gilwee, W.	12-Chemistry

**NCA 2-675306 San Jose State University 1396**  
Application of structure optimization capabilities to airframe designs problems

<i>Period</i>	<i>Obligations</i>	
09/01/83-08/31/84	FY83: \$39,983	TOTAL: \$39,983
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wang, J. C.	ARC/Miura, H.	41-Aero Engr

**NCC 2-3 San Jose State University 1397**  
A study of fiber materials for use in temperature resistant fiber reinforced composites

<i>Period</i>	<i>Obligations</i>	
05/31/79-10/31/83	FY83: \$41,951	TOTAL: \$217,342
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anderson, R. N.	ARC/Riccitiello, S. R.	47-Materials Engr

**NCC 2-4 San Jose State University 1398**  
An investigation of the toxic hazards from burning materials in controlled fires

<i>Period</i>	<i>Obligations</i>	
04/01/79-10/31/82	FY83:	TOTAL: \$109,887
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ballard, R. C.	ARC/Cagliostro, D. E.	12-Chemistry

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<b>NCC 2-8 San Jose State University 1399</b>			
Development of superoxides as an improved oxygen source for breathing apparatus			
<i>Period</i>		<i>Obligations</i>	
06/20/79-11/30/82	FY83:	TOTAL: \$183,128	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Spitze, L. A.	ARC/Wydeven, T.	12-Chemistry	
Wood, P.			
<b>NCC 2-68 San Jose State University 1407</b>			
One and two-dimensional atmospheric computer model and studies			
<i>Period</i>		<i>Obligations</i>	
04/01/80-09/30/83	FY83: \$26,000	TOTAL: \$232,835	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Riegel, C. A.	ARC/Toon, O. B.	31-Atmos Sci	
	ARC/Danielson, E. F.		
<b>NCC 2-14 San Jose State University 1400</b>			
Oxygen effects and early biochemical evolution			
<i>Period</i>		<i>Obligations</i>	
06/01/79-12/31/83	FY83:	TOTAL: \$42,112	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Neptune, J. A.	ARC/Klein, H. P.	54-Env Biology	
Satyanarayana, T.			
<b>NCC 2-28 San Jose State University 1401</b>			
Characterization and degradation studies on aromatic polyimides, polyesters and composite resins			
<i>Period</i>		<i>Obligations</i>	
10/01/79-01/31/83	FY83: \$10,529	TOTAL: \$191,118	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Hsu, M. T.	ARC/Parker, J. A.	12-Chemistry	
<b>NCC 2-34 San Jose State University 1402</b>			
Cooperative research on flight management			
<i>Period</i>		<i>Obligations</i>	
10/01/79-10/31/83	FY83: \$99,038	TOTAL: \$438,707	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Plant, W. T.	ARC/Hart, S. G.	59-Life Sci, NEC	
<b>NCC 2-35 San Jose State University 1403</b>			
Simulation technology: Human performance in flight simulation abstract			
<i>Period</i>		<i>Obligations</i>	
10/01/79-01/31/84	FY83: \$30,000	TOTAL: \$263,610	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Plant, W. T.	ARC/Tanner, T. A.	69-Psych, NEC	
<b>NCC 2-37 San Jose State University 1404</b>			
Helicopter human factors			
<i>Period</i>		<i>Obligations</i>	
10/01/79-10/31/83	FY83: \$31,303	TOTAL: \$268,606	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Plant, W. T.	ARC/Hartzell, E. J.	69-Psych, NEC	
<b>NCC 2-53 San Jose State University 1405</b>			
Mineral separation systems			
<i>Period</i>		<i>Obligations</i>	
01/01/80-02/28/82	FY83:	TOTAL: \$80,032	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Spitze, L. A.	ARC/Wydeven, T.	12-Chemistry	
<b>NCC 2-56 San Jose State University 1406</b>			
Heat release studies for aircraft materials			
<i>Period</i>		<i>Obligations</i>	
01/01/80-12/31/83	FY83: \$58,750	TOTAL: \$234,353	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ling, A. C.	ARC/Kourtides, D. A.	12-Chemistry	
	ARC/Gilwee, W. J.		
<b>NCC 2-72 San Jose State University 1408</b>			
Changes in cortisol and antidiuretic hormone during induced motion sickness in squirrel monkeys			
<i>Period</i>		<i>Obligations</i>	
04/15/80-02/28/82	FY83:	TOTAL: \$26,214	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Fox, R. A.	ARC/Suri, K. P.	51-Biological Sci	
<b>NCC 2-73 San Jose State University 1409</b>			
A method for evaluating the transports by mean deviatory motions in a two-dimensional model			
<i>Period</i>		<i>Obligations</i>	
05/01/80-10/31/83	FY83: \$34,132	TOTAL: \$167,293	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Riegel, C. A.	ARC/Danielson, E. F.	31-Atmos Sci	
	ARC/Summers, A. L.		
<b>NCC 2-80 San Jose State University 1410</b>			
A study of the physical properties of composites			
<i>Period</i>		<i>Obligations</i>	
05/01/80-08/31/82	FY83:	TOTAL: \$29,998	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Holmstrom, F.	ARC/Mansfield, J.	47-Materials Engr	
<b>NCC 2-83 San Jose State University 1411</b>			
Determination, state estimation and parameter identification			
<i>Period</i>		<i>Obligations</i>	
06/01/80-11/30/83	FY83: \$103,676	TOTAL: \$353,826	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wang, J. C.	ARC/Jinkerson, J. H.	41-Aero Engr	
Demiroz, M. Y.	ARC/Shoekay, G. A.		
Yoshida, K.			
<b>NCC 2-114 San Jose State University 1412</b>			
A study of the fire characteristics resulting from liquid fuel spills on flat, inclined surfaces			
<i>Period</i>		<i>Obligations</i>	
01/01/81-06/30/83	FY83: \$15,000	TOTAL: \$88,359	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ponds, J. W.	ARC/Holmstrom, F.	49-Engr, NEC	
<b>NCC 2-116 San Jose State University 1413</b>			
Assessment of airline pilot's rhythm synchrony			
<i>Period</i>		<i>Obligations</i>	
01/01/81-04/30/82	FY83:	TOTAL: \$25,765	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Holley, D. C.	ARC/Winget, C. M.	59-Life Sci, NEC	

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**NCC 2-123** **San Jose State University** **1414**  
Smoothing of flight test and accident data  
*Period* *Obligations*  
02/01/81-09/30/83 FY83: \$4,624 TOTAL: \$10,023  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wang, J. C. ARC/Wingrove, R. C. 41-Aero Engr

**NCC 2-161** **San Jose State University** **1421**  
Smoothing of flight-test and accident data  
*Period* *Obligations*  
10/01/81-10/31/83 FY83: \$20,311 TOTAL: \$39,623  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Moriarty, G. ARC/Wingrove, R. C. 41-Aero Engr

**NCC 2-132** **San Jose State University** **1415**  
A radiative-convective model study of the climatic effects of aerosols  
*Period* *Obligations*  
04/01/81-05/31/82 FY83: TOTAL: \$41,784  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Riegel, C. A. ARC/Pollack, J. 31-Atmos Sci

**NCC 2-165** **San Jose State University** **1422**  
Combustion properties of carbon fiber composites  
*Period* *Obligations*  
11/01/81-09/30/82 FY83: TOTAL: \$20,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mayer, L. A. ARC/Mansfield, J. A. 49-Engr, NEC

**NCC 2-137** **San Jose State University** **1416**  
Environmental influences on failure mechanisms of graphite/epoxy composites  
*Period* *Obligations*  
07/01/81-06/30/83 FY83: TOTAL: \$58,798  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Clements, L. L. ARC/Nelson, H. G. 47-Materials Engr

**NCC 2-167** **San Jose State University** **1423**  
Functional significance of sensory interactions in the vestibular system in relation to self motion perception and motion sickness  
*Period* *Obligations*  
01/01/82-12/31/83 FY83: \$39,660 TOTAL: \$88,990  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fox, R. A. ARC/Daunton, N. G. 51-Biological Sci

**NCC 2-141** **San Jose State University** **1417**  
An experimental model to predict the degree of circadian rhythm disruption following alterations of rest-activity cycles  
*Period* *Obligations*  
05/01/81-10/31/82 FY83: TOTAL: \$17,610  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Holley, D. C. ARC/Winget, C. M. 51-Biological Sci

**NCC 2-168** **San Jose State University** **1424**  
Experimental studies of the distribution of minor constituents  
*Period* *Obligations*  
01/01/82-12/31/83 FY83: \$55,764 TOTAL: \$88,764  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goodman, J. ARC/Vedder, J. F. 31-Atmos Sci

**NCC 2-143** **San Jose State University** **1418**  
Design and fabrication of surface acoustics wave devices  
*Period* *Obligations*  
05/01/81-11/30/82 FY83: TOTAL: \$6,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Yuen, C. ARC/Deboo, G. J. 45-Elec Engr  
ARC/Westbrook, D. M.

**NCC 2-183** **San Jose State University** **1425**  
Climatic effects of the arctic haze  
*Period* *Obligations*  
04/01/82-03/31/83 FY83: TOTAL: \$11,673  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Riegel, C. A. ARC/Pollack, J. B. 31-Atmos Sci

**NCC 2-153** **San Jose State University** **1419**  
Energetic contributions of the mineral phase to chemistry on planetary surfaces  
*Period* *Obligations*  
07/01/81-10/31/83 FY83: \$84,000 TOTAL: \$164,350  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Coyne, L. M. ARC/Chang, S. 12-Chemistry  
Ling, A. C. ARC/Lawless, J.

**NCC 2-195** **San Jose State University** **1426**  
Development of analytical techniques for the analysis of fiber materials  
*Period* *Obligations*  
08/01/82-07/31/84 FY83: \$35,803 TOTAL: \$61,415  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Anderson, R. N. ARC/Riccitiello, S. R. 47-Materials Engr  
ARC/Leiser, D.

**NCC 2-155** **San Jose State University** **1420**  
The relative stress corrosion cracking susceptibility of candidate aluminum-lithium alloys  
*Period* *Obligations*  
08/24/81-12/31/83 FY83: \$96,048 TOTAL: \$158,318  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pizzo, P. P. ARC/Nelson, H. G. 47-Materials Engr

**NCC 2-197** **San Jose State University** **1427**  
Circadian rhythms: Physiological adjustment and performance in simulation studies  
*Period* *Obligations*  
06/01/82-10/31/83 FY83: \$42,000 TOTAL: \$67,088  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Holley, D. C. ARC/Deroshia, C. W. 51-Biological Sci  
ARC/Winget, C. M.

**NASA'S UNIVERSITY PROGRAM  
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**NCC 2-207 San Jose State University 1428**  
Mechanisms by which hypergravitational exposure influences hormonal and enzymatic regulation of carbohydrate metabolism

Period	Obligations	
06/01/82-10/31/83	FY83: \$15,002	TOTAL: \$23,122
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Holley, D. C.	ARC/Oyama, J.	51-Biological Sci

**NCC 2-256 San Jose State University 1435**  
The study of the effects of fire environments on propellant structures

Period	Obligations	
06/01/83-12/31/83	FY83: \$40,000	TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Holmstrom, F.	ARC/Mansfield, J. A.	49-Engr, NEC

**NCC 2-211 San Jose State University 1429**  
Tropospheric stratospheric measurement studies

Period	Obligations	
09/22/82-10/31/83	FY83:	TOTAL: \$53,398
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Riegel, C.	ARC/Chan, K. L.	31-Atmos Sci
Bowen, S. W.		

**NCC 2-261 San Jose State University 1436**  
The use of superoxide mixture as air revitalization chemicals in hyperbaric self-contained, closed-circuit breathing apparatus

Period	Obligations	
08/01/83-05/31/84	FY83: \$20,774	TOTAL: \$20,774
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Spitze, L. A.	ARC/Wydeven, T. J.	12-Chemistry
Wood, P.		

**NCC 2-216 San Jose State University 1430**  
Numerical approximations modeling for preliminary aircraft design

Period	Obligations	
10/01/82-11/30/83	FY83: \$34,676	TOTAL: \$34,676
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Huynh, L. C.	ARC/Bowles, J. V.	29-Math/Computer, NEC
Wang, J. C.	ARC/Galloway, T. L.	

**NCC 2-267 San Jose State University 1437**  
Development of digital flight control laws and a flight control computer system for RSRA rotor performance research

Period	Obligations	
08/22/83-08/21/84	FY83: \$302,693	TOTAL: \$302,693
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wang, J. C.	ARC/Talbot, P. D.	41-Aero Engr
	ARC/Shockey, G.	

**NCC 2-221 San Jose State University 1431**  
Wet oxidation for waste treatment in a CELSS

Period	Obligations	
12/01/82-08/31/83	FY83: \$23,800	TOTAL: \$23,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Spitze, L. A.	ARC/Wydeven, T. J.	12-Chemistry
Wood, P.		

**NAG 1-97 Stanford University 1438**  
Basic research in structural dynamics and control of large flexible space structures

Period	Obligations	
08/01/80-07/31/82	FY83:	TOTAL: \$218,675
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cannon, R. H., Jr.	LARC/Montgomery, R. C.	42-Astro Engr
	LARC/Horner, G. C.	

**NCC 2-227 San Jose State University 1432**  
Studies of histological and ultrastructural changes in the mammalian brain following HZE irradiation

Period	Obligations	
01/01/83-11/30/83	FY83: \$94,618	TOTAL: \$94,618
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Savage, W.	ARC/Kraft, L. M.	51-Biological Sci

**NAG 1-105 Stanford University 1439**  
Research investigation of a miniature hydraulic actuator system

Period	Obligations	
10/01/80-01/31/83	FY83:	TOTAL: \$58,520
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Debra, D. B.	LARC/Edwards, J. W.	41-Aero Engr
	LARC/Terray, D. E.	

**NCC 2-237 San Jose State University 1433**  
A numerical study of the observed water cycle on Mars

Period	Obligations	
03/16/83-03/15/84	FY83: \$46,721	TOTAL: \$46,721
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Riegel, C. A.	ARC/Pollack, J. B.	19-Phys Sci, NEC
Haberle, R. M.	ARC/Summers, A. L.	

**NAG 1-182 Stanford University 1440**  
High energy efficient solid state laser sources

Period	Obligations	
06/01/81-10/31/83	FY83: \$10,000	TOTAL: \$118,409
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Byer, R. L.	LARC/Browell, E. V.	45-Elec Engr
	LARC/Carter, A. F.	

**NCC 2-246 San Jose State University 1434**  
Steam regeneration of a solid amine CO<sub>2</sub> absorbent

Period	Obligations	
05/01/83-01/31/84	FY83: \$48,858	TOTAL: \$48,858
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shitze, L. A.	ARC/Wydeven, T. J.	12-Chemistry
Wood, P. C.		

**NAG 1-202 Stanford University 1441**  
Effects of required take-off and landing runway lengths and cruise speed

Period	Obligations	
06/01/81-05/31/82	FY83:	TOTAL: \$27,701
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shevell, R. S.	LARC/Jernell, L. S.	41-Aero Engr

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<b>NAG 1-236</b>	<b>Stanford University</b>	<b>1442</b>	Basic research in structural dynamics and control of large flexible space structures	
<i>Period</i> 01/01/82-12/31/82	<i>Obligations</i> FY83:	<i>Obligations</i> TOTAL: \$69,021	<i>Prin. Invest.</i> Ashley, H.	<i>NASA Tech. Officer</i> LARC/Montgomery, R. C. 42-Astro Engr
				<i>CASE Category</i> LARC/Horner, G. C.

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**NAG 2-122** **Stanford University** **1456**  
A theoretical study of circadian organization and its disruption known as jet lag  
*Period* *Obligations*  
07/01/81-06/30/83 FY83: TOTAL: \$74,590  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pittendrigh, C. S. ARC/Klein, H. P. 51-Biological Sci

**NAG 2-187** **Stanford University** **1463**  
Unsteady effects of propellers in non-uniform flows  
*Period* *Obligations*  
06/01/82-10/31/82 FY83: TOTAL: \$9,439  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shevell, R. S. ARC/Corsiglia, V. R. 41-Aero Engr  
ARC/Jonkouski, G. C.

**NAG 2-127** **Stanford University** **1457**  
A Schlieren-shadowgraph optical system for unsteady flow observations  
*Period* *Obligations*  
07/01/81-06/30/82 FY83: TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Soderman, P. T. 41-Aero Engr

**NAG 2-191** **Stanford University** **1464**  
Modeling and control of V/STOL aircraft  
*Period* *Obligations*  
08/15/82-08/14/84 FY83: \$50,000 TOTAL: \$150,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bryson, A. E. ARC/Erzberger, H. 41-Aero Engr  
ARC/Bull, J. S.

**NAG 2-130** **Stanford University** **1458**  
Noninvasive determination of bone properties from mechanical measurement  
*Period* *Obligations*  
10/01/81-10/31/83 FY83: \$28,000 TOTAL: \$56,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Steele, C. R. ARC/Young, D. R. 56-Medical Sciences

**NAG 2-223** **Stanford University** **1465**  
Control system design based on reduced order models  
*Period* *Obligations*  
01/01/83-08/31/84 FY83: \$75,776 TOTAL: \$75,776  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Franklin, G. F. ARC/Petersen, K. L. 41-Aero Engr  
ARC/Gera, J.

**NAG 2-156** **Stanford University** **1459**  
Artificial stabilization of a lightweight RPV rotary wing aircraft  
*Period* *Obligations*  
01/01/82-06/30/83 FY83: \$6,000 TOTAL: \$24,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Debra, D. ARC/Morse, H. A. 41-Aero Engr  
ARC/Schmitz, F. H.

**NAG 2-236** **Stanford University** **1466**  
Recent advances in aerodynamics and aeroacoustics  
*Period* *Obligations*  
10/01/82-09/30/83 FY83: \$60,633 TOTAL: \$60,633  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Deckert, W. 41-Aero Engr

**NAG 2-168** **Stanford University** **1460**  
Modeling inferential decision making during emergencies  
*Period* *Obligations*  
01/01/82-12/31/82 FY83: TOTAL: \$21,683  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Thompson, D. A. ARC/Curry, R. E. 59-Life Sci, NEC

**NAG 2-246** **Stanford University** **1467**  
Development of an aviation software testing methodology  
*Period* *Obligations*  
08/01/83-11/30/83 FY83: \$55,000 TOTAL: \$55,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McCluskey, E. J. ARC/Saito, J. 41-Aero Engr

**NAG 2-172** **Stanford University** **1461**  
Quantification of resonant refractivity as an improved flow visualization technique  
*Period* *Obligations*  
01/01/82-12/31/83 FY83: TOTAL: \$6,508  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bershader, D. ARC/McKenzie, R. L. 13-Physics

**NAG 2-248** **Stanford University** **1468**  
Design of testbed and emulation tools  
*Period* *Obligations*  
10/01/83-02/29/84 FY83: \$50,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lundstrom, S. F. ARC/Stevens, K. G., Jr. 22-Computer Science  
Flynn, M. J. ARC/Schulbach, C. H.

**NAG 2-173** **Stanford University** **1462**  
Circulation control aerodynamics  
*Period* *Obligations*  
01/01/82-10/31/83 FY83: \$80,000 TOTAL: \$137,897  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Hicks, R. M. 41-Aero Engr  
Wood, N. J. ARC/Davis, J. J.

**NAG 3-3** **Stanford University** **1469**  
Heat transfer and hydrodynamic studies on a curved surface with full-coverage film coolings  
*Period* *Obligations*  
11/01/79-10/28/83 FY83: \$113,461 TOTAL: \$392,771  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Johnston, J. P. LERC/Gaugler, R. E. 46-Mech Engr  
Moffat, R. J.  
Kays, W. M.

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**NAG 3-63** **Stanford University** **1470**  
Computing low-thrust transfers to synchronous orbit  
*Period* *Obligations*  
05/02/80-04/28/84 FY83: \$30,000 TOTAL: \$120,979  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Breakwell, J. V. LERC/Diesposti, R. S. 42-Astro Engr  
Redding, D.

**NAG 3-151** **Stanford University** **1471**  
Interference study among satellite systems of various modulation techniques  
*Period* *Obligations*  
01/05/81-01/03/83 FY83: TOTAL: \$129,264  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lusignan, B. B. LERC/Whyte, W. A. 45-Elec Engr

**NAG 3-248** **Stanford University** **1472**  
Structure and high temperature strength of properties of cobalt and nickel aluminides  
*Period* *Obligations*  
01/02/82-02/29/84 FY83: \$65,440 TOTAL: \$125,787  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nix, W. D. LERC/Whittenberger, J. D. 47-Materials Engr  
Sinclair, R.

**NAG 3-261** **Stanford University** **1473**  
Free surface phenomena under low and zero gravity conditions  
*Period* *Obligations*  
02/25/82-02/23/84 FY83: TOTAL: \$46,776  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hesselink, L. LERC/Chai, A. T. 13-Physics

**NAG 3-275** **Stanford University** **1474**  
Development of computational algorithms highly rotational subsonic inviscid flow simulation  
*Period* *Obligations*  
09/01/82-12/31/83 FY83: TOTAL: \$99,965  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Steger, J. L. LERC/Johnson, G. M. 41-Aero Engr

**NAG 3-285** **Stanford University** **1475**  
Velocity visualization in gaseous flows  
*Period* *Obligations*  
05/15/82-05/13/84 FY83: \$61,758 TOTAL: \$101,758  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hanson, R. K. LERC/Bosque, M. A. 41-Aero Engr

**NAG 3-319** **Stanford University** **1476**  
An element-by-element solution algorithm for problems of structural mechanics  
*Period* *Obligations*  
09/01/82-10/31/83 FY83: TOTAL: \$65,230  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hughes, T. J. LERC/Chamis, C. C. 41-Aero Engr  
LERC/Hirschbein, M. S.

**NAG 3-427** **Stanford University** **1477**  
Heat transfer effects of longitudinal vortices embedded in a turbulent boundary layer  
*Period* *Obligations*  
06/01/83-12/01/83 FY83: \$7,889 TOTAL: \$7,889  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eaton, J. K. LERC/Graham, R. W. 46-Mech Engr

**NAG 5-178** **Stanford University** **1478**  
Research relative to rupture mechanics of plate boundaries  
*Period* *Obligations*  
05/15/81-05/14/83 FY83: TOTAL: \$89,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nur, A. M. GSFC/Welker, J. 32-Geological Sci  
Thompson, G. A.

**NAG 5-202** **Stanford University** **1479**  
A study of the chromospheres, coronae and transition regions of main sequence and giant stars  
*Period* *Obligations*  
08/01/81-07/31/83 FY83: TOTAL: \$14,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Walker, A. B. GSFC/Kondo, Y. 11-Astronomy

**NAG 5-220** **Stanford University** **1480**  
Growth and evaluation of crystals for infrared nonlinear applications  
*Period* *Obligations*  
02/01/82-01/31/84 FY83: \$47,008 TOTAL: \$97,163  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Byer, R. L. GSFC/Buften, J. L. 45-Elec Engr  
Feigelson, R. S. GSFC/Degnan, J. J.

**NAG 5-261** **Stanford University** **1481**  
Research relative to spatio-temporal reasoning  
*Period* *Obligations*  
08/01/82-08/31/84 FY83: \$127,837 TOTAL: \$227,837  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Binford, T. O. GSFC/Paddock, S. J. 22-Computer Science  
Buchanan, B. G.

**NAG 5-611** **Stanford University** **1482**  
An investigation of current collection processes in the ionospheric plasma at high potential  
*Period* *Obligations*  
08/01/82-11/30/83 FY83: TOTAL: \$77,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Banks, P. M. GSFC/Early, L. J. 13-Physics  
Williamson, P. R.

**NAG 8-16** **Stanford University** **1483**  
Thermal ion dynamics experiment (TIDE) an investigation of low energy (0-100 eV) ions on the PPL and EML spacecraft of the OPEN mission  
*Period* *Obligations*  
08/30/82-11/17/83 FY83: TOTAL: \$2,990  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Banks, P. MSFC/Chappett, C. R. 11-Astronomy



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**NAG 8-325** **Stanford University** **1484**  
A study of the size and composition of interstellar grains  
*Period* *Obligations*  
03/01/80-02/28/84 FY83: TOTAL: \$15,563  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Walker, A. B. MSFC/Stone, J. F. 11-Astronomy

**NAGW 92** **Stanford University** **1485**  
Research in solar plasma theory  
*Period* *Obligations*  
07/15/80-07/14/84 FY83: \$180,000 TOTAL: \$661,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sturrock, P. A. HQ-EE/Butler, D. M. 13-Physics  
HQ-EE/Birmingham, T. J.

**NAGW 152** **Stanford University** **1486**  
New theoretical models of Jupiter's ionosphere in response to the results of radio occultation observations  
*Period* *Obligations*  
03/15/81-04/14/84 FY83: \$79,000 TOTAL: \$201,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eshleman, V. R. HQ-EL/Brinton, H. C. 13-Physics  
HQ-EL/Brunk, W. E.

**NAGW 164** **Stanford University** **1487**  
A comparative study of Jovian and terrestrial plasma waves  
*Period* *Obligations*  
03/15/81-03/14/84 FY83: \$35,000 TOTAL: \$105,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Helliwell, R. A. HQ-EE/Lynch, J. T. 13-Physics  
HQ-EL/Evans, N.

**NAGW 235** **Stanford University** **1488**  
Study of the dynamics of atmosphere-ionosphere magnetosphere interactions  
*Period* *Obligations*  
08/15/81-07/31/83 FY83: \$404,208 TOTAL: \$804,208  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Banks, P. M. HQ-EE/Lynch, J. T. 42-Astro Engr  
HQ-EE/Schmerling, E. R.

**NAGW 268** **Stanford University** **1489**  
Materials for high temperature thermo electric conversion  
*Period* *Obligations*  
10/01/81-12/31/83 FY83: \$250,000 TOTAL: \$400,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Felgelson, R. HQ-RT/Ambrus, J. H. 47-Materials Engr  
Elwell, D. JPL/Stapher, G.  
Route, R.

**NAGW 278** **Stanford University** **1490**  
Theoretical studies of the solar wind flow around the Earth and other planets  
*Period* *Obligations*  
03/01/82-02/28/84 FY83: \$50,000 TOTAL: \$100,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Spreiter, J. R. HQ-EE/Lynch, J. T. 13-Physics  
HQ-EE/Wiskerchein, M. J.

**NAGW 299** **Stanford University** **1491**  
Theoretical studies of cosmological tests from space observations  
*Period* *Obligations*  
03/01/82-08/31/84 FY83: \$13,572 TOTAL: \$29,096  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wagoner, R. V. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAGW 326** **Stanford University** **1492**  
Radio science technique as tool for planetary and solar system exploration  
*Period* *Obligations*  
06/01/82-05/31/83 FY83: TOTAL: \$80,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eshelman, V. R. HQ-EL/Brinton, H. C. 11-Astronomy  
Tyler, G. L. HQ-EL/Brunk, W. E.

**NAGW 341** **Stanford University** **1493**  
Analysis of radio occultation and scattering observations of Saturn's ring with Voyager spacecraft  
*Period* *Obligations*  
04/01/82-01/31/84 FY83: \$168,000 TOTAL: \$268,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tyler, G. L. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/Boyce, J. M.

**NAGW 361** **Stanford University** **1494**  
Interpretation of Seasat SAR imagery in terms of ocean surface parameters using specially processed data from the JASIN and GOASEX experiments  
*Period* *Obligations*  
06/01/82-06/31/83 FY83: TOTAL: \$53,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Peterson, A. M. HQ-EE/McGoldrick, L. F.  
Vesecky, J. HQ-EE/Wilson, W. S. 33-Oceanography  
Gonzalez, F. I.

**NAGW 419** **Stanford University** **1495**  
Formation of the Stanford center for aeronautics and space information sciences  
*Period* *Obligations*  
01/12/83-01/11/84 FY83: \$415,000 TOTAL: \$415,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Banks, P. M. HQ-RT/Larsen, R. L. 22-Computer Science  
HQ-RT/Holcomb, L. B.

**NAS 5-24420** **Stanford University** **1496**  
Observation and correlative studies from ISEE-C data from the Stanford solar telescope  
*Period* *Obligations*  
02/17/78-09/30/81 FY83: TOTAL: \$275,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wilcox, J. M. GSFC/Wales, R. O. 13-Physics

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**NAS 5-25688** **Stanford University** **1497**  
Controlled and naturally occurring wave particle interaction-  
Investigation on Dynamics Explorer phase III  
*Period* *Obligations*  
05/01/80-09/30/84 FY83: \$189,261 TOTAL: \$449,261  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nelliwek, R. A. GSFC/Bullock, G. D. 11-Astronomy

**NAS 5-25744** **Stanford University** **1498**  
International Sun-Earth Explorer data reduction  
*Period* *Obligations*  
11/01/79-09/30/84 FY83: \$113,885 TOTAL: \$511,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Helliwell, R. A. GSFC/Wales, R. O. 11-Astronomy

**NAS 5-26020** **Stanford University** **1499**  
Definition study of the total absorption shower counter  
*Period* *Obligations*  
01/07/80-10/31/81 FY83: TOTAL: \$312,237  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hofstadter, R. GSFC/Campbell, C. E. 11-Astronomy

**NAS 5-26682** **Stanford University** **1500**  
Design phase of total absorption shower counter  
*Period* *Obligations*  
08/01/81-11/15/83 FY83: \$524,195 TOTAL: \$1,514,110  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hofstadter, R. GSFC/Hartman, R. C. 11-Astronomy  
GSFC/Campbell, C. E.

**NAS 5-27557** **Stanford University** **1501**  
Implementation phase for the energetic gamma experiment  
telescope (EGRET)  
*Period* *Obligations*  
03/07/83-08/31/88 FY83: \$1,952,000 TOTAL: \$1,952,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hofstadter, R. GSFC/Hartman, R. C. 11-Astronomy  
Hughes, E. B. GSFC/Campbell, C. E.

**NAS 8-32852** **Stanford University** **1502**  
Definition study of plasma depletion experiments during Spacelab  
mission 2  
*Period* *Obligations*  
10/01/77-08/31/84 FY83: TOTAL: \$66,594  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Darosa, A. V. MSFC/Guynes, B. V. 31-Atmos Sci  
MSFC/Ise, R.

**NAS 8-33110** **Stanford University** **1503**  
Direct observation of interface instability during crystal growth  
*Period* *Obligations*  
12/01/78-01/31/82 FY83: TOTAL: \$265,793  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tiller, W. A. MSFC/Reeves, F. A. 19-Phys Sci, NEC  
MSFC/Savage, W. A.

**NAS 8-33796** **Stanford University** **1504**  
A preliminary study of a cryogenic equivalence principle experi-  
ment on shuttle  
*Period* *Obligations*  
04/30/80-04/30/84 FY83: \$96,000 TOTAL: \$159,861  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Everitt, C. W. MSFC/Decher, R. 31-Atmos Sci  
Worden, P. W. MSFC/Baugher, C. R.

**NAS 8-34430** **Stanford University** **1505**  
Dynamics-A Explorer rims data analysis  
*Period* *Obligations*  
09/17/81-03/16/85 FY83: \$25,000 TOTAL: \$71,592  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Banks, P. M. MSFC/Chappell, C. R. 31-Atmos Sci  
MSFC/Fields, S. A.

**NAS 8-34619** **Stanford University** **1506**  
Research study: Develop a program for the study of general  
relativity theory  
*Period* *Obligations*  
11/30/81-06/30/84 FY83: \$1,300,332 TOTAL: \$2,315,330  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Everitt, C. W. MSFC/Potter, R. 13-Physics  
Debra, D. B.  
Fairbanks, W. M.

**NAS 8-34872** **Stanford University** **1507**  
Influence of low frequency vibrations on growth of single crystals  
from melts and solutions  
*Period* *Obligations*  
07/06/82-10/06/83 FY83: TOTAL: \$80,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ferguson, R. S. MSFC/Fogle, V. 47-Materials Engr  
Elwell, D.

**NAS 8-35350** **Stanford University** **1508**  
Research study: Sepac co-investigator support  
*Period* *Obligations*  
07/17/83-09/26/84 FY83: \$70,000 TOTAL: \$70,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Banks, P. M. MSFC/Reasoner, D. 13-Physics

**NAS 8-35502** **Stanford University** **1509**  
High voltage characteristics of the electrodynamic tether and  
the generation of power and propulsion  
*Period* *Obligations*  
08/10/83-08/09/84 FY83: \$50,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Banks, P. M. MSFC/Stone, N. H. 31-Atmos Sci  
Storey, L. R. MSFC/Laue, J. H.

**NASW 3204** **Stanford University** **1510**  
A program of research and research internships in telecom-  
munications and information technology  
*Period* *Obligations*  
07/01/78-06/30/83 FY83: \$10 TOTAL: \$988,174  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dunn, D. HQ-EP/Schrom, J. S. 39-Env Sci, NEC  
Agnew, C.

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CALIFORNIA (Continued)**

**NCA 2-745004** **Stanford University** **1511**  
Stable boundary approximations for difference methods for compressible fluids  
*Period* *Obligations*  
04/01/80-09/30/82 FY83: TOTAL: \$27,532  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Oliger, J. ARC/Beam, R. M. 22-Computer Science

**NCA 2-745005** **Stanford University** **1512**  
A study of the use of multigrid techniques on the relaxation of steady transonic flows  
*Period* *Obligations*  
06/01/80-05/31/82 FY83: TOTAL: \$31,849  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Steger, J. L. ARC/Lomax, H. 41-Aero Engr

**NCA 2-745007** **Stanford University** **1513**  
Receptor alterations and stress  
*Period* *Obligations*  
10/01/80-06/30/83 FY83: TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Feldman, D. ARC/Holton, E. 51-Biological Sci

**NCA 2-745008** **Stanford University** **1514**  
Cosmological and local effects of the variable cosmological constant  
*Period* *Obligations*  
09/15/80-09/14/82 FY83: TOTAL: \$26,200  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Petrosian, V. ARC/Caroff, L. J. 13-Physics

**NCA 2-745101** **Stanford University** **1515**  
Numerical simulation of separated flows by a vortex tracing algorithm  
*Period* *Obligations*  
10/01/80-01/31/83 FY83: TOTAL: \$28,875  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Baganoff, D. ARC/Leonard, A. 41-Aero Engr

**NCA 2-745103** **Stanford University** **1516**  
Purification, separation and resolution of amino acids by h.p.l.c  
*Period* *Obligations*  
06/01/81-12/31/82 FY83: TOTAL: \$19,377  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bonner, W. A. ARC/Desmarais, D. J. 12-Chemistry

**NCA 2-745104** **Stanford University** **1517**  
Development of time-accurate finite element techniques for first-order hyperbolic systems with particular emphasis on the compressible Euler equations  
*Period* *Obligations*  
05/01/81-05/31/83 FY83: \$8,000 TOTAL: \$30,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hughes, T. J. ARC/Lomax, H. 46-Mech Engr

**NCA 2-745105** **Stanford University** **1518**  
Chemical and microstructural characterization of noble metal particles highly dispersed on model supports  
*Period* *Obligations*  
03/01/81-06/30/83 FY83: TOTAL: \$21,053  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Boudart, M. ARC/Poppa, H. 43-Chem Engr

**NCA 2-745107** **Stanford University** **1519**  
Endocrine effects on rodent bone cells  
*Period* *Obligations*  
07/01/81-08/31/82 FY83: TOTAL: \$27,272  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Feldman, D. ARC/Holton, E. M. 56-Medical Sciences

**NCA 2-745108** **Stanford University** **1520**  
Factors influencing orthostatic tolerance and re-entry tolerance following weightlessness simulation  
*Period* *Obligations*  
07/01/81-10/31/83 FY83: \$20,000 TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Debusk, R. F. ARC/Goldwater, D. 56-Medical Sciences  
Haskell, W.

**NCA 2-745202** **Stanford University** **1521**  
The carbon isotope biogeochemistry of Krebs cycle and the development of high performance liquid chromatographic procedures for the analysis of its products  
*Period* *Obligations*  
01/01/82-12/31/82 FY83: TOTAL: \$29,993  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bonner, W. A. ARC/Desmarais, D. J. 12-Chemistry

**NCA 2-745204** **Stanford University** **1522**  
Transonic asymmetric vortex interaction over slender bodies at high angles of attack  
*Period* *Obligations*  
03/01/82-02/28/84 FY83: \$14,231 TOTAL: \$28,297  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Steger, J. L. ARC/Schiff, L. B. 41-Aero Engr

**NCA 2-745205** **Stanford University** **1523**  
A Chimera scheme for the transonic solution of the Euler equations using a zonal approach  
*Period* *Obligations*  
06/01/82-09/30/83 FY83: \$23,717 TOTAL: \$28,117  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Steger, J. L. ARC/Lomax, H. 41-Aero Engr

**NCA 2-745206** **Stanford University** **1524**  
Investigations of the role of vasopressin in the CNS control of body temperature and metabolism  
*Period* *Obligations*  
06/15/82-09/14/83 FY83: \$4,543 TOTAL: \$8,043  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Heller, H. C. ARC/Williams, B. A. 51-Biological Sci  
George, C. P. ARC/Mehler, W. R.

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<b>NCA 2-745207</b>	<b>Stanford University</b>		<b>1525</b>
	Construction of a 1K bolometer for astronomical observations at millimeter wavelengths		
	<i>Period</i>	<i>Obligations</i>	
	07/01/82-06/30/84	FY83: \$1,100	TOTAL: \$12,687
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Walker, A. B.		ARC/Werner, M. W.
	ARC/Roellig, T. P.		11-Astronomy
<b>NCA 2-745208</b>	<b>Stanford University</b>		<b>1526</b>
	Endocrine modulation of receptors of rodent bone cells		
	<i>Period</i>	<i>Obligations</i>	
	08/01/82-07/31/84	FY83: \$30,000	TOTAL: \$60,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Feldman, D.		ARC/Holton, E. M.
			51-Biological Sci
<b>NCA 2-745301</b>	<b>Stanford University</b>		<b>1527</b>
	Computational procedures for rotational flows		
	<i>Period</i>	<i>Obligations</i>	
	10/01/82-09/30/83	FY83: \$19,556	TOTAL: \$19,556
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Steger, J. L.		ARC/Chyu, W. J.
			41-Aero Engr
<b>NCA 2-745302</b>	<b>Stanford University</b>		<b>1528</b>
	Study on the mapping of Navier-Stokes algorithms onto multiple instruction/multiple data stream computers		
	<i>Period</i>	<i>Obligations</i>	
	10/01/82-09/30/84	FY83: \$54,596	TOTAL: \$54,596
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Baganoff, D.		ARC/Stevens, K. G.
	Steger, J. L.		41-Aero Engr
<b>NCA 2-745303</b>	<b>Stanford University</b>		<b>1529</b>
	Carbon isotope biogeochemistry of sedimentary organic material as influenced by microbial ecosystems		
	<i>Period</i>	<i>Obligations</i>	
	10/01/82-09/30/83	FY83: \$39,823	TOTAL: \$39,823
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Bonner, W.		ARC/Desmarais, D. J.
			12-Chemistry
<b>NCA 2-745304</b>	<b>Stanford University</b>		<b>1530</b>
	Sensitivity maximization of an astronomical grating spectrometer		
	<i>Period</i>	<i>Obligations</i>	
	10/01/82-10/31/83	FY83: \$5,000	TOTAL: \$5,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Petrosian, V.		ARC/Erickson, E. F.
			11-Astronomy
<b>NCA 2-745305</b>	<b>Stanford University</b>		<b>1531</b>
	Computation of circulation control airfoil flows		
	<i>Period</i>	<i>Obligations</i>	
	01/01/83-10/31/83	FY83: \$12,958	TOTAL: \$12,958
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Cantwell, B. J.		ARC/Chyu, W. J.
			41-Aero Engr
<b>NCA 2-745306</b>	<b>Stanford University</b>		<b>1532</b>
	Optical computer assisted tomography measurements of fluid flows (joint research interchange)		
	<i>Period</i>	<i>Obligations</i>	
	03/01/83-10/31/83	FY83: \$16,274	TOTAL: \$16,274
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Hesselink, L.		ARC/Lee, G.
			19-Phys Sci, NEC
<b>NCA 2-745307</b>	<b>Stanford University</b>		<b>1533</b>
	Improved robustness and discontinuity-capturing in finite element methods for the compressible Euler equations		
	<i>Period</i>	<i>Obligations</i>	
	07/01/83-06/30/84	FY83: \$7,000	TOTAL: \$7,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Hughes, T. J.		ARC/Lomax, H.
			41-Aero Engr
<b>NCA 2-745308</b>	<b>Stanford University</b>		<b>1534</b>
	Mass accretion onto a white dwarf: The thermonuclear runaway model for novae		
	<i>Period</i>	<i>Obligations</i>	
	07/01/83-09/30/83	FY83: \$10,095	TOTAL: \$10,095
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Wagoner, R. V.		ARC/Barnes, A.
			13-Physics
<b>NCA 2-745309</b>	<b>Stanford University</b>		<b>1535</b>
	Computation of 3-D strake-wing configuration flow fields		
	<i>Period</i>	<i>Obligations</i>	
	07/01/83-09/30/84	FY83: \$6,500	TOTAL: \$6,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Cantwell, B. J.		ARC/Kutler, P.
			41-Aero Engr
<b>NCA 2-745310</b>	<b>Stanford University</b>		<b>1536</b>
	Investigation of effective configurations for management information systems		
	<i>Period</i>	<i>Obligations</i>	
	06/01/83-05/31/84	FY83: \$9,441	TOTAL: \$9,441
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Dunn, D. A.		ARC/Alton, L. R.
			29-Math/Computer, NEC
<b>NCA 2-745311</b>	<b>Stanford University</b>		<b>1537</b>
	Crystal size and morphology of iron particles on various supports: Their influence on the chemisorption of dihydrogen and the rate of h2-d2 equilibrium catalyzed by iron		
	<i>Period</i>	<i>Obligations</i>	
	06/01/83-05/31/85	FY83: \$13,000	TOTAL: \$13,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Boudart, M.		ARC/Poppa, H.
			43-Chem Engr
<b>NCA 2-745312</b>	<b>Stanford University</b>		<b>1538</b>
	Asymptotic matching by the symbolic manipulator MACSYMA		
	<i>Period</i>	<i>Obligations</i>	
	07/01/83-09/30/83	FY83: \$5,743	TOTAL: \$5,743
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Van Dyke, M. D.		ARC/Lomax, H.
			41-Aero Engr
<b>NCA 2-745313</b>	<b>Stanford University</b>		<b>1539</b>
	Numerical simulation of three-dimensional separated flows		
	<i>Period</i>	<i>Obligations</i>	
	07/01/83-06/30/84	FY83: \$8,000	TOTAL: \$8,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
	Ferziger, J. H.		ARC/Leonard, A.
			22-Computer Science

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**NCA 2-745314** **Stanford University** **1540**  
Vorticity interaction study  
*Period* *Obligations*  
07/01/83-09/30/83 FY83: \$4,916 TOTAL: \$4,916  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bershafer, D. ARC/McCroskey, W. J. 41-Aero Engr  
ARC/Caradonna, F. X.

**NCC 2-44** **Stanford University** **1547**  
Perceptual problems in aeronautics  
*Period* *Obligations*  
11/01/79-10/31/83 FY83: \$98,846 TOTAL: \$399,512  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Ahumada, A. J., Jr. 69-Psych, NEC  
Wandell, B. ARC/Watson, A. B.

**NCA 2-745315** **Stanford University** **1541**  
Electrostatic stabilization for rotary wing remotely piloted vehicles (RPV)  
*Period* *Obligations*  
07/01/83-06/30/84 FY83: \$40,000 TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Debra, D. ARC/Schmitz, F. H. 41-Aero Engr  
ARC/Gossett, T. D.

**NCC 2-46** **Stanford University** **1548**  
An investigation of the performance, application potential, and inherent limitations of the new microanalytical instrument: The Auger microprobe  
*Period* *Obligations*  
02/01/80-02/28/82 FY83: TOTAL: \$65,979  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Heinemann, K. ARC/Arnold, J. O. 13-Physics

**NCC 2-1** **Stanford University** **1542**  
Development of ultrasonic indices for Space Shuttle passenger selection  
*Period* *Obligations*  
04/01/79-02/29/84 FY83: \$77,600 TOTAL: \$307,600  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Popp, R. ARC/Goldwater, D. 56-Medical Sciences

**NCC 2-50** **Stanford University** **1549**  
Ultra high resolution molecular beam CARS spectroscopy with applications to planetary atmospheric molecules  
*Period* *Obligations*  
01/01/80-06/30/82 FY83: TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Byer, R. L. ARC/Chackerians, C. 13-Physics

**NCC 2-13** **Stanford University** **1543**  
Experimental studies of rotors  
*Period* *Obligations*  
06/01/79-04/30/82 FY83: TOTAL: \$222,309  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Johnson, W. R. 41-Aero Engr  
Chopra, I.

**NCC 2-51** **Stanford University** **1550**  
Cardiovascular magnetic measurements  
*Period* *Obligations*  
01/01/80-11/30/82 FY83: TOTAL: \$75,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harrison, D. C. ARC/Sandler, H. 56-Medical Sciences

**NCC 2-15** **Stanford University** **1544**  
A cooperative program in the computation of turbulent flows  
*Period* *Obligations*  
07/01/79-10/14/83 FY83: \$77,900 TOTAL: \$321,010  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ferziger, J. H. ARC/Rubeshin, M. W. 41-Aero Engr  
Reynolds, W. C.

**NCC 2-55** **Stanford University** **1551**  
The research and training activities for the Joint Institute for Aeronautics and Acoustics  
*Period* *Obligations*  
12/01/79-12/31/83 FY83: \$206,459 TOTAL: \$663,110  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Deckert, W. H. 41-Aero Engr  
ARC/Hickey, D. H.

**NCC 2-21** **Stanford University** **1545**  
Fundamental studies of unsteady turbulent boundary layers  
*Period* *Obligations*  
09/01/79-03/31/83 FY83: TOTAL: \$275,154  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Reynolds, W. G. ARC/Carr, L. W. 41-Aero Engr  
Parikh, P. G.

**NCC 2-59** **Stanford University** **1552**  
Joint Institute for Aeronautics and Acoustics: Study of trailing edge flows at high Reynolds number  
*Period* *Obligations*  
12/01/79-06/30/83 FY83: \$52,572 TOTAL: \$278,746  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Marvin, J. G. 41-Aero Engr  
Viswanath, P. R. ARC/Brown, J. L.

**NCC 2-29** **Stanford University** **1546**  
NASA-Ames/Stanford Joint Institute for Aeronautics and Acoustics: Shuttle infrared telescope pointing control system  
*Period* *Obligations*  
10/01/79-10/31/83 FY83: \$30,000 TOTAL: \$191,665  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Powell, J. D. ARC/Lemke, L. G. 42-Astro Engr  
Vanbezooyen, R. W.

**NCC 2-74** **Stanford University** **1553**  
Stanford/Ames Joint Institute for Aeronautics and Acoustics: Aerodynamic studies relating to short-haul aircraft  
*Period* *Obligations*  
03/01/80-11/30/83 FY83: \$85,014 TOTAL: \$262,824  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Koenig, D. G. 41-Aero Engr  
Ayoub, A. ARC/Aoyagi, K.

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**NCC 2-75** **Stanford University** **1554**  
Stanford/Ames Joint Institute for Aeronautics and Acoustics flight effects on jet noise  
*Period* *Obligations*  
03/01/80-04/30/82 FY83: TOTAL: \$160,132  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Atencio, A. 41-Aero Engr  
ARC/Hickey, D. H.

**NCC 2-77** **Stanford University** **1555**  
Boundary layers and wakes of oscillating airfoils at subsonic and transonic speeds  
*Period* *Obligations*  
03/01/80-12/31/83 FY83: \$116,000 TOTAL: \$451,026  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Schairer, E. T. 41-Aero Engr

**NCC 2-82** **Stanford University** **1556**  
Photodiagnostics of turbulent flows using laser-induced fluorescence  
*Period* *Obligations*  
10/01/80-09/30/83 FY83: TOTAL: \$170,788  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bershader, D. ARC/McKenzie, R. L. 41-Aero Engr

**NCC 2-89** **Stanford University** **1557**  
Studies of rotor aeroacoustics  
*Period* *Obligations*  
06/01/80-09/30/83 FY83: \$122,107 TOTAL: \$824,205  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Davis, S. S. 41-Aero Engr  
Wright, S.

**NCC 2-103** **Stanford University** **1558**  
Long term influence of physical aging processes in epoxy matrix composites  
*Period* *Obligations*  
11/15/80-07/31/83 FY83: \$58,468 TOTAL: \$177,198  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Heinemann, K. ARC/Nelson, H. G. 47-Materials Engr

**NCC 2-106** **Stanford University** **1559**  
Studies of flight director systems for powered lift aircraft  
*Period* *Obligations*  
11/01/80-02/28/84 FY83: \$137,000 TOTAL: \$336,154  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bryson, A. E., Jr. ARC/Franklin, J. A. 41-Aero Engr  
Hindson, W. S. ARC/Chen, R. T.

**NCC 2-120** **Stanford University** **1560**  
Investigation of the properties of doped-silicon on sapphire for far infrared bolometers  
*Period* *Obligations*  
03/01/81-08/02/82 FY83: TOTAL: \$41,879  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Geballe, T. H. ARC/Kittel, P. 13-Physics

**NCC 2-125** **Stanford University** **1561**  
Computer simulation of surface and film processes  
*Period* *Obligations*  
05/01/81-04/30/84 FY83: \$70,000 TOTAL: \$197,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tiller, W. A. ARC/Cooper, D. M. 13-Physics  
Halicioglu, H. T.

**NCC 2-126** **Stanford University** **1562**  
The effects of simulated weightlessness on regional blood flow specifically during cardiovascular stress  
*Period* *Obligations*  
01/01/81-01/31/84 FY83: \$90,000 TOTAL: \$289,980  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harrison, D. C. ARC/Sandler, H. 59-Life Sci, NEC

**NCC 2-129** **Stanford University** **1563**  
A study of a three dimensional hyperbolic grid generation scheme  
*Period* *Obligations*  
02/01/81-08/31/82 FY83: TOTAL: \$8,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Steger, J. L. ARC/Sorenson, R. L. 29-Math/Computer, NEC

**NCC 2-145** **Stanford University** **1564**  
Construction of improved measurement system  
*Period* *Obligations*  
04/01/81-03/31/82 FY83: TOTAL: \$32,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Steele, C. ARC/Young, D. R. 56-Medical Sciences

**NCC 2-149** **Stanford University** **1565**  
Theoretical studies in aerodynamics  
*Period* *Obligations*  
07/01/81-10/31/83 FY83: \$65,804 TOTAL: \$265,990  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Presley, L. L. 41-Aero Engr  
Roberts, L. ARC/Lee, G.

**NCC 2-150** **Stanford University** **1566**  
Study of powered lift aircraft technology  
*Period* *Obligations*  
07/01/81-10/31/83 FY83: \$71,664 TOTAL: \$171,664  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Roberts, L. R. ARC/Deckert, W. H. 41-Aero Engr  
ARC/Snyder, W. J.

**NCC 2-177** **Stanford University** **1567**  
Perceptual qualities of helicopter-like pulses  
*Period* *Obligations*  
01/01/82-12/31/83 FY83: \$22,686 TOTAL: \$43,686  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Ahumada, A. J. 69-Psych, NEC  
ARC/Nagel, D. C.

**NASA'S UNIVERSITY PROGRAM  
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**NCC 2-188** **Stanford University** **1568**  
Tomographic reconstruction methods for use in rotorblade research  
*Period* *Obligations*  
06/01/82-05/30/84 FY83: \$29,400 TOTAL: \$59,334  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hesselink, P. I. ARC/Yu, Y. H. 41-Aero Engr  
ARC/Kittleson, J. K.

**NCC 2-198** **Stanford University** **1569**  
Jet in cross flow  
*Period* *Obligations*  
02/01/82-01/31/84 FY83: TOTAL: \$24,840  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Aoyagi, K. 41-Aero Engr  
Krothapalli, K. ARC/Koenig, D. G.  
Leopold, D.

**NCC 2-212** **Stanford University** **1570**  
Studies of the effects of flow fields on noise directivity  
*Period* *Obligations*  
08/01/82-07/31/84 FY83: \$30,000 TOTAL: \$90,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Soderman, P. T. 41-Aero Engr  
Levin, H. ARC/Hickey, D.

**NCC 2-215** **Stanford University** **1571**  
Communication scripts on the flight deck  
*Period* *Obligations*  
10/01/82-10/31/83 FY83: \$33,782 TOTAL: \$33,782  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Calfee, R. C. ARC/Tanner, T. A. 69-Psych, NEC

**NCC 2-219** **Stanford University** **1572**  
Helicopter high-speed impulsive noise  
*Period* *Obligations*  
09/01/82-02/28/83 FY83: \$40,000 TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Snyder, W. J. 41-Aero Engr  
Dash, R. ARC/Foster, J. D.

**NCC 2-220** **Stanford University** **1573**  
Advanced knowledge-based system architectures  
*Period* *Obligations*  
10/01/82-12/31/83 FY83: \$75,000 TOTAL: \$75,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Feigenbaum, E. A. ARC/Lum, H. 22-Computer Science

**NCC 2-222** **Stanford University** **1574**  
Infrared fiber optic materials  
*Period* *Obligations*  
01/01/83-12/31/83 FY83: \$42,569 TOTAL: \$42,569  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Feigelson, R. S. ARC/Goebel, J. H. 47-Materials Engr  
Route, R. K. ARC/Lum, H.

**NCC 2-232** **Stanford University** **1575**  
Pharmacologic countermeasures for minimizing post- space flight orthostatic intolerance  
*Period* *Obligations*  
09/01/82-09/30/83 FY83: \$60,000 TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harrison, D. C. ARC/Sandler, H. 56-Medical Sciences  
Kates, R. E. ARC/Goldwater, D.

**NCC 2-238** **Stanford University** **1576**  
Experimental studies of three-dimensional turbulent boundary layers  
*Period* *Obligations*  
03/01/83-02/29/84 FY83: \$45,000 TOTAL: \$45,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eaton, J. K. ARC/Johnson, D. A. 46-Mech Engr  
Johnston, J. P. ARC/Westphal, R. V.

**NCC 2-247** **Stanford University** **1577**  
Investigation into air combat maneuvering and flight software  
*Period* *Obligations*  
05/01/83-01/31/84 FY83: \$68,429 TOTAL: \$68,429  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Breakwell, J. V. ARC/Ardema, M. 41-Aero Engr

**NCC 2-250** **Stanford University** **1578**  
Development of an aviation software testing methodology  
*Period* *Obligations*  
08/01/83-11/30/83 FY83: \$55,000 TOTAL: \$55,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McCluskey, E. J. ARC/Saito, J. 41-Aero Engr  
Andrews, D. M. ARC/Doane, D. H.

**NGL 05-020-007** **Stanford University** **1579**  
Guidance and control of flight vehicles  
*Period* *Obligations*  
08/17/72-08/14/84 FY83: TOTAL: \$1,774,564  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bryson, A. E. ARC/Erzberger, H. 49-Engr, NEC

**NGL 05-020-008** **Stanford University** **1580**  
A study of the effects on the Earth's environment of very low frequency radiation into the magnetosphere from electrical transmission lines and ground based very low frequency transmitters  
*Period* *Obligations*  
09/01/61-02/28/84 FY83: \$100,000 TOTAL: \$2,385,440  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Helliwell, R. A. HQ-EE/Lynch, J. T. 13-Physics  
HQ-EE/Wishencher, M. T.

**NGL 05-020-014** **Stanford University** **1581**  
Theoretical and experimental radio and radar studies of lunar, planetary ionospheres, atmospheres, and surfaces of Sun and interplanetary medium  
*Period* *Obligations*  
04/30/63-09/30/83 FY83: \$160,000 TOTAL: \$4,076,351  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eshleman, V. R. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

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**NGL 05-020-176** **Stanford University** **1582**  
Investigation of space-related whistler propagation phenomena  
in laboratory plasmas  
*Period* *Obligations*  
03/02/67-09/30/83 **FY83:** **TOTAL: \$1,422,100**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Crawford, F. W. HQ-EE/Lynch, J. T. 19-Phys Sci, NEC  
HQ-EE/Schmerling, E. R.

**NGL 05-020-243** **Stanford University** **1583**  
Refined methods of aeroelastic analysis and optimization  
*Period* *Obligations*  
08/14/67-08/31/85 **FY83: \$22,000** **TOTAL: \$271,764**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ashley, H. LARC/Doggett, R. V., Jr. 41-Aero Engr

**NGL 05-020-272** **Stanford University** **1584**  
Theoretical study of the solar atmosphere and the structure of  
active regions  
*Period* *Obligations*  
06/07/68-09/30/83 **FY83: \$100,000** **TOTAL: \$1,330,196**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sturrock, P. A. HQ-EZ/Chipman, E. G. 13-Physics

**NGL 05-020-582** **Stanford University** **1585**  
Abiotic origins of optical activity  
*Period* *Obligations*  
04/18/72-12/31/83 **FY83:** **TOTAL: \$390,106**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bonner, W. A. HQ-EB/Devincenzi, D. L.  
59-Life Sci, NEC

**NGR 05-020-456** **Stanford University** **1586**  
Effects of altered gravitational stress on fluid balance and  
circulation of blood  
*Period* *Obligations*  
05/01/70-12/31/83 **FY83:** **TOTAL: \$422,090**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Luetscher, J. A. ARC/Keil, L. C. 56-Medical Sciences

**NGR 05-020-559** **Stanford University** **1587**  
Structure of solar magnetic and velocity fields  
*Period* *Obligations*  
03/22/72-10/31/83 **FY83: \$133,354** **TOTAL: \$1,089,826**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wilcox, J. M. HQ-EZ/Chipman, E. G. 11-Astronomy

**NGR 05-020-634** **Stanford University** **1588**  
Biomedical technology transfer  
*Period* *Obligations*  
12/07/72-04/30/82 **FY83:** **TOTAL: \$1,531,488**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harrison, D. C. ARC/Sandler, H. 56-Medical Sciences

**NGR 05-020-649** **Stanford University** **1589**  
Study of lunar and planetary surfaces  
*Period* *Obligations*  
03/06/73-07/31/84 **FY83: \$25,000** **TOTAL: \$223,170**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Howard, H. T. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NGR 05-020-668** **Stanford University** **1590**  
Magnetosphere structure and radiation mechanisms on pulsars  
*Period* *Obligations*  
11/01/73-11/30/83 **FY83: \$40,000** **TOTAL: \$307,500**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sturrock, P. A. HQ-EZ/Kaluzienski, L. J. 11-Astronomy  
HQ-EZ/Opp, A. G.

**NGT 05-020-412** **Stanford University** **1591**  
A summer program of NASA summer faculty fellowships  
*Period* *Obligations*  
12/16/69-03/31/84 **FY83: \$326,237** **TOTAL: \$2,547,752**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bershader, D. HQ-LB/Owens, F. C. 49-Engr, NEC  
Mayers, J.

**NGT 05-020-800** **Stanford University** **1592**  
Graduate student researchers program  
*Period* *Obligations*  
09/01/80-09/30/82 **FY83:** **TOTAL: \$15,000**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Zare, R. N. HQ-LB/Carter, C. H. 12-Chemistry

**NGT 05-020-801** **Stanford University** **1593**  
Graduate student training program in computational fluid dynam-  
ics  
*Period* *Obligations*  
07/01/80-12/31/83 **FY83: \$105,000** **TOTAL: \$380,000**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Chapman, D. R. HQ-RT/Graves, R. A., Jr. 41-Aero Engr

**NGT 05-020-802** **Stanford University** **1594**  
Graduate student researchers program  
*Period* *Obligations*  
06/15/81-08/31/82 **FY83:** **TOTAL: \$13,000**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Steger, J. L. HQ-LB/Carter, C. H. 41-Aero Engr

**NGT 05-020-803** **Stanford University** **1595**  
Graduate student researchers program  
*Period* *Obligations*  
06/01/81-11/30/82 **FY83:** **TOTAL: \$11,100**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Walker, A. B., Jr. HQ-LB/Carter, C. H. 11-Astronomy

**NGT 05-020-804** **Stanford University** **1596**  
Graduate student researchers program  
*Period* *Obligations*  
05/01/82-03/31/84 **FY83: \$12,300** **TOTAL: \$23,400**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Petrosian, V. HQ-LB/Owens, F. C. 13-Physics

**NGT 05-020-805** **Stanford University** **1597**  
NASA graduate student researchers program  
*Period* *Obligations*  
05/01/83-04/30/84 **FY83: \$15,000** **TOTAL: \$15,000**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bates, C. W., Jr. HQ-LB/Owens, F. C. 13-Physics



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**NGT 05-020-806** **Stanford University** **1598**  
NASA graduate student researchers program  
*Period* *Obligations*  
05/01/83-04/30/84 FY83: \$12,300 TOTAL: \$12,300  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bershader, D. HQ-LB/Owens, F. C. 41-Aero Engr

**NGT 05-020-807** **Stanford University** **1599**  
NASA graduate student researchers program  
*Period* *Obligations*  
06/20/83-06/19/84 FY83: \$10,350 TOTAL: \$10,350  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Steele, C. R. HQ-LB/Owens, F. C. 41-Aero Engr

**NGT 05-020-808** **Stanford University** **1600**  
1983 summer faculty program  
*Period* *Obligations*  
05/01/83-08/31/84 FY83: \$259,598 TOTAL: \$259,598  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bershader, D. HQ-LB/Owens, F. C. 49-Engr, NEC

**NSG 2121** **Stanford University** **1601**  
Preliminary design and computer simulation of a very large  
Fourier transform processor for the interstellar search system  
*Period* *Obligations*  
01/01/76-10/31/83 FY83: \$364,000 TOTAL: \$1,067,871  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Peterson, A. M. ARC/Wolfe, J. H. 49-Engr, NEC  
ARC/Billingham, J.

**NSG 2400** **Stanford University** **1602**  
Control of V/STOL aircraft in ground effect  
*Period* *Obligations*  
08/01/79-12/31/82 FY83: TOTAL: \$57,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Debra, D. B. ARC/Franklin, J. A. 41-Aero Engr  
Bryson, A. E.

**NSG 4002** **Stanford University** **1603**  
Theoretical and experimental investigations in the control of  
aircraft  
*Period* *Obligations*  
09/01/74-12/31/83 FY83: \$30,000 TOTAL: \$556,161  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Debra, D. B. DFRF/Gilyard, G. B. 41-Aero Engr  
Ashley, H.  
Breakwell, J. V.

**NSG 5131** **Stanford University** **1604**  
Spectroscopy of cosmic X-ray sources of the solar corona  
*Period* *Obligations*  
11/15/76-12/31/83 FY83: \$180,000 TOTAL: \$1,240,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Walker, A. B. GSFC/Early, L. J. 13-Physics  
Underwood, J. H. GSFC/Pless, R. H.

**NSG 7092** **Stanford University** **1605**  
Energy release in solar flares based on OSO-5 data  
*Period* *Obligations*  
10/01/74-11/31/83 FY83: \$55,000 TOTAL: \$412,499  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Petrosian, V. HQ-EZ/Chipman, E. G. 11-Astronomy

**NSG 7552** **Stanford University** **1606**  
Analysis of coronal flow and wave phenomena during the solar  
occultation of the Viking Earth radio link  
*Period* *Obligations*  
10/01/78-11/30/83 FY83: \$60,500 TOTAL: \$270,982  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tyler, G. L. HQ-EZ/Chipman, E. 13-Physics

**NAG 2-102** **University of California - Berkeley** **1607**  
Superconducting receivers for near-millimeter wavelengths  
*Period* *Obligations*  
03/01/81-02/28/83 FY83: TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Richards, P. L. ARC/Kittel, P. 13-Physics  
ARC/Lum, H.

**NAG 2-200** **University of California - Berkeley** **1608**  
Two new approaches to unanswered question about star  
formation regions  
*Period* *Obligations*  
11/01/82-10/31/84 FY83: TOTAL: \$14,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McKee, C. F. ARC/Haughney, L. C. 11-Astronomy  
Jaffe, D.

**NAG 2-208** **University of California - Berkeley** **1609**  
Spectroscopic observation of infrared lines normally obscured  
by atmospheric absorption  
*Period* *Obligations*  
11/01/82-10/31/83 FY83: \$79,305 TOTAL: \$79,305  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Townes, C. H. ARC/Haughney, L. C. 11-Astronomy

**NAG 2-254** **University of California - Berkeley** **1610**  
A multi-transition study of excited CO from molecular cloud cores  
with a 200 m-500 m heterodyne spectrometer  
*Period* *Obligations*  
10/01/83-03/31/84 FY83: \$22,500 TOTAL: \$22,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Betz, A. L. ARC/Haughney, L. C. 11-Astronomy

**NAG 3-131** **University of California - Berkeley** **1611**  
Numerical modeling of turbulent combustion  
*Period* *Obligations*  
11/28/80-11/25/83 FY83: \$75,136 TOTAL: \$210,451  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Oppenheim, A. K. LERC/Marek, C. J. 41-Aero Engr  
Chorin, A. J.

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**NAG 3-137 University of California - Berkeley 1612**  
Study of jet ignition using liquid fuels

Period	Obligations	
12/08/80-12/05/84	FY83: \$91,036	TOTAL: \$281,457
Prin. Invest.	NASA Tech. Officer	CASE Category
Oppenheim, A. K.	LERC/Schock, H. J.	46-Mech Engr
	LERC/Willis, E. A.	

**NAG 3-146 University of California - Berkeley 1613**  
Surface tension phenomena under low and zero gravity conditions

Period	Obligations	
01/07/81-08/09/84	FY83: \$21,933	TOTAL: \$61,964
Prin. Invest.	NASA Tech. Officer	CASE Category
Concus, P.	LERC/Chai, A. T.	13-Physics
Finn, R.		

**NAG 3-443 University of California - Berkeley 1614**  
Fundamental study of smoldering with emphasis on experimental design for zero G

Period	Obligations	
06/30/83-06/29/84	FY83: \$40,000	TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Pagni, P. J.	LERC/Vento, D. M.	49-Engr, NEC
Fernandez-pello, A. C.		

**NAG 5-69 University of California - Berkeley 1615**  
Eclipse coverage of selected variable and binary stars

Period	Obligations	
06/01/80-11/30/83	FY83: \$42,100	TOTAL: \$89,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Bowyer, C. S.	GSFC/Kondo, Y.	11-Astronomy
Clarke, J. T.		
Basri, G. S.		

**NAG 5-95 University of California - Berkeley 1616**  
Research relative to low noise amplifiers for radio astronomy

Period	Obligations	
09/01/80-05/31/84	FY83: \$25,000	TOTAL: \$210,556
Prin. Invest.	NASA Tech. Officer	CASE Category
Welch, W. J.	GSFC/Clark, T. A.	19-Phys Sci, NEC
Backer, D. C.	GSFC/Wildes, W. T.	

**NAG 5-139 University of California - Berkeley 1617**  
Equatorial extreme far ultraviolet airglow

Period	Obligations	
02/01/81-04/30/82	FY83:	TOTAL: \$16,963
Prin. Invest.	NASA Tech. Officer	CASE Category
Bowyer, S.	GSFC/Spencer, N. W.	31-Atmos Sci
Paresce, F.		

**NAG 5-278 University of California - Berkeley 1618**  
The ultraviolet excess in T Tauri stars

Period	Obligations	
09/15/82-09/14/83	FY83:	TOTAL: \$8,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Kuhi, L. V.	GSFC/Kondo, Y.	11-Astronomy
Basri, G. S.		

**NAG 5-345 University of California - Berkeley 1619**  
An absorption line study of high latitude diffuses clouds

Period	Obligations	
07/15/83-01/14/84	FY83: \$4,900	TOTAL: \$4,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Basri, G.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-375 University of California - Berkeley 1620**  
Electric field studies

Period	Obligations	
10/01/83-11/30/83	FY83: \$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Mozer, F. S.	GSFC/Wales, R. O.	45-Elec Engr

**NAG 6-10 University of California - Berkeley 1621**  
Sounding rocket research program

Period	Obligations	
11/01/80-10/31/83	FY83: \$200,000	TOTAL: \$551,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Mozer, F. S.	GSFC/Early, L. J.	19-Phys Sci, NEC
	GSFC/Pless, R. H.	

**NAG 8-397 University of California - Berkeley 1622**  
Spectra of 3 T Tauri stars

Period	Obligations	
06/18/81-06/17/82	FY83:	TOTAL: \$5,607
Prin. Invest.	NASA Tech. Officer	CASE Category
Kuhi, L. V.	MSFC/Stone, J. F.	11-Astronomy

**NAG 8-440 University of California - Berkeley 1623**  
Rotation-activity connection in single F0-G5 stars RS CVN survey follow-up, an investigation of the two component corona, rapidly rotating G giants: The FK Comae stars

Period	Obligations	
08/01/82-07/31/83	FY83:	TOTAL: \$7,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Bowyer, C. S.	MSFC/Stone, J. F.	11-Astronomy
Walter, F.		

**NAG 8-446 University of California - Berkeley 1624**  
Studies of highly variable galactic X-ray sources with HEAO-1

Period	Obligations	
09/15/82-09/14/83	FY83:	TOTAL: \$10,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Price, P. B.	MSFC/Stone, J. F.	11-Astronomy
Cominsky, L.		

**NAG 9-34 University of California - Berkeley 1625**  
Isotopic studies in meteorites and lunar samples

Period	Obligations	
02/01/83-01/31/84	FY83: \$187,000	TOTAL: \$187,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Reynolds, J. H.	JSC/Dietrich, J. W.	13-Physics

**NAGW 44 University of California - Berkeley 1626**  
The nature of dwarf novae and related systems

Period	Obligations	
03/01/80-02/28/82	FY83:	TOTAL: \$29,387
Prin. Invest.	NASA Tech. Officer	CASE Category
Lampton, M. L.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Holt, S. S.	

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**NAGW 66 University of California - Berkeley 1627**  
Microwave and theoretical studies related to the COBE satellite mission

Period	Obligations	
07/01/80-07/31/84	FY83: \$25,000	TOTAL: \$71,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Smoot, G. F.	HQ-EZ/Boggess, N. W.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NAGW 75 University of California - Berkeley 1628**  
Theoretical study of auroral arc formation

Period	Obligations	
06/01/80-11/30/83	FY83: \$50,000	TOTAL: \$395,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Hudson, M. K.	HQ-EE/Butler, D. M.	39-Env Sci, NEC

**NAGW 211 University of California - Berkeley 1629**  
Conference on thioredoxins

Period	Obligations	
06/01/81-09/30/82	FY83:	TOTAL: \$40,280
Prin. Invest.	NASA Tech. Officer	CASE Category
Buchanan, B. B.	HQ-EB/Devincenzi, D. L.	51-Biological Sci

**NAGW 239 University of California - Berkeley 1630**  
Geotropic stimulus production in roots of corn

Period	Obligations	
08/01/81-10/31/83	FY83:	TOTAL: \$79,569
Prin. Invest.	NASA Tech. Officer	CASE Category
Feldman, L. J.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NAGW 270 University of California - Berkeley 1631**  
Quantitative spectroscopy of comets

Period	Obligations	
12/01/81-05/31/84	FY83: \$20,600	TOTAL: \$33,792
Prin. Invest.	NASA Tech. Officer	CASE Category
Spinrad, H.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Brinton, H. C.	

**NAGW 282 University of California - Berkeley 1632**  
The spectral evolution of distant galaxies

Period	Obligations	
02/01/82-07/31/83	FY83:	TOTAL: \$18,085
Prin. Invest.	NASA Tech. Officer	CASE Category
Spinrad, H.	HQ-EZ/Weiler, E. J.	11-Astronomy
	HQ-EZ/Boggess, N. W.	

**NAGW 369 University of California - Berkeley 1633**  
Submillimeter detectors for space application

Period	Obligations	
09/01/82-08/31/83	FY83:	TOTAL: \$35,303
Prin. Invest.	NASA Tech. Officer	CASE Category
Richards, P. L.	HQ-EZ/Boggess, N. W.	13-Physics

**NAGW 370 University of California - Berkeley 1634**  
A study of the atmospheric and ionospheric Reseyo satellites observations of 300-1400 A airglow

Period	Obligations	
10/01/82-09/30/83	FY83:	TOTAL: \$20,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Bowyer, C. S.	HQ-EE/Lynch, J. T.	19-Phys Sci, NEC
	HQ-EE/Schmerling, E. R.	

**NAGW 427 University of California - Berkeley 1635**  
Thioredoxin-linked enzyme regulative as a probe for studying the evolution of photosynthesis

Period	Obligations	
02/01/83-01/31/84	FY83: \$46,468	TOTAL: \$46,468
Prin. Invest.	NASA Tech. Officer	CASE Category
Buchanan, B. B.	HQ-EB/Devincenzi, D. L.	51-Biological Sci
	HQ-EB/Rambler, M.	

**NAGW 434 University of California - Berkeley 1636**  
Oxygen in the Earth's core: An experiment study

Period	Obligations	
03/01/83-02/29/84	FY83: \$38,093	TOTAL: \$38,093
Prin. Invest.	NASA Tech. Officer	CASE Category
Jeanloz, R.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

**NAS 1-17426 University of California - Berkeley 1637**  
Development tasks for long duration exposure facility (LDEF) cosmic ray detectors

Period	Obligations	
08/11/83-08/26/84	FY83: \$220,000	TOTAL: \$220,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Price, P. B.	LARC/Jones, J. L.	11-Astronomy
Tarle, G.	LARC/Kinard, W. H.	

**NAS 2-10499 University of California - Berkeley 1638**  
Monkey metabolism, body composition and cardiovascular function in weightlessness

Period	Obligations	
01/17/80-11/16/81	FY83:	TOTAL: \$15,062
Prin. Invest.	NASA Tech. Officer	CASE Category
Pace, N.	ARC/Ferandin, J. A.	51-Biological Sci

**NAS 2-10504 University of California - Berkeley 1639**  
Scale relationships in mammalian metabolism in weightlessness

Period	Obligations	
01/17/80-11/16/81	FY83:	TOTAL: \$44,963
Prin. Invest.	NASA Tech. Officer	CASE Category
Pace, N.	ARC/Ferandin, J. A.	51-Biological Sci

**NAS 2-10658 University of California - Berkeley 1640**  
Metabolic rate and thyroid function in the monkey subjects of the Cosmos 81 mission

Period	Obligations	
06/01/80-07/31/83	FY83:	TOTAL: \$37,160
Prin. Invest.	NASA Tech. Officer	CASE Category
Pace, N.	ARC/Souza, K.	51-Biological Sci
	ARC/Heinrich, M.	

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**NAS 5-20995 University of California - Berkeley 1641**  
Isotopic composition of primary cosmic rays H thru FE for ISEE C spacecraft

Period	Obligations
03/19/75-09/30/83	FY83: TOTAL: \$1,880,400
Prin. Invest.	NASA Tech. Officer CASE Category
Heckman, H. H.	GSFC/Wales, R. O. 13-Physics

**NAS 5-25980 University of California - Berkeley 1648**  
International Sun-Earth Explorer-A and -B data reduction and analysis for the energetic particles flux experiment

Period	Obligations
11/01/79-09/30/83	FY83: \$244,255 TOTAL: \$1,100,000
Prin. Invest.	NASA Tech. Officer CASE Category
Anderson, K. A.	GSFC/Wales, R. O. 11-Astronomy

**NAS 5-22307 University of California - Berkeley 1642**  
Solar X-ray and interplanetary and solar electrons for the ISEE-C spacecraft

Period	Obligations
04/11/75-12/31/83	FY83: TOTAL: \$1,725,719
Prin. Invest.	NASA Tech. Officer CASE Category
Anderson, K. A.	GSFC/Wales, R. O. 32-Geological Sci
	GSFC/Corrigan, J. P.

**NAS 5-26837 University of California - Berkeley 1649**  
Data analysis of HEAO-1, a 2 low energy experiment

Period	Obligations
01/15/82-03/31/84	FY83: \$15,000 TOTAL: \$83,800
Prin. Invest.	NASA Tech. Officer CASE Category
Bowyer, C. S.	GSFC/Bullock, G. D. 11-Astronomy

**NAS 5-24445 University of California - Berkeley 1643**  
Development of instrumentation for an extreme ultraviolet Explorer

Period	Obligations
02/28/78-01/02/83	FY83: TOTAL: \$884,637
Prin. Invest.	NASA Tech. Officer CASE Category
Bowery	GSFC/Willis, S. B. 11-Astronomy
Lampton, M.	
Paresce, F.	

**NAS 5-26847 University of California - Berkeley 1650**  
Study of electric field instruments for the open polar plasma laboratory (PPL) and geomagnetic tail laboratory (GTL) satellites

Period	Obligations
05/07/82-09/15/84	FY83: \$94,671 TOTAL: \$178,671
Prin. Invest.	NASA Tech. Officer CASE Category
Mozer, F. S.	GSFC/O'Brien, J. J. 13-Physics

**NAS 5-25007 University of California - Berkeley 1644**  
Microwave and theoretical studies for Cosmic Background Explorer (COBE) satellite

Period	Obligations
03/01/78-07/01/83	FY83: \$56,339 TOTAL: \$505,827
Prin. Invest.	NASA Tech. Officer CASE Category
Usher, D. A.	GSFC/Mather, J. C. 11-Astronomy
	GSFC/Donohoe, M. J.

**NAS 5-26855 University of California - Berkeley 1651**  
Definition study of 3-D plasma and energetic particle distribution under the OPEN (origin of plasmas in the Earth's neighborhood project)

Period	Obligations
05/08/82-09/15/84	FY83: \$51,500 TOTAL: \$129,500
Prin. Invest.	NASA Tech. Officer CASE Category
Lin, R. P.	GSFC/O'Brien, J. J. 13-Physics

**NAS 5-25070 University of California - Berkeley 1645**  
Provide engineering and consulting services to the space telescope instrument science team

Period	Obligations
05/20/78-01/31/84	FY83: \$45,000 TOTAL: \$198,000
Prin. Invest.	NASA Tech. Officer CASE Category
King, I.	GSFC/Hobbs, R. 11-Astronomy

**NAS 5-26867 University of California - Berkeley 1652**  
Theoretical study of wave particle interaction under the OPEN project

Period	Obligations
05/07/82-09/15/84	FY83: \$25,448 TOTAL: \$54,448
Prin. Invest.	NASA Tech. Officer CASE Category
Hudson, M. K.	GSFC/O'Brien, J. J. 11-Astronomy

**NAS 5-25770 University of California - Berkeley 1646**  
International-Sun-Earth Explorer-A data reduction and analysis for the quasi-electric fields experiment

Period	Obligations
11/01/79-12/31/83	FY83: \$118,898 TOTAL: \$615,631
Prin. Invest.	NASA Tech. Officer CASE Category
Mozer, F. S.	GSFC/Wales, R. O. 11-Astronomy

**NAS 5-27377 University of California - Berkeley 1653**  
Analysis of the quality of image data acquired by the LANDSAT-D thematic mapper (TM)

Period	Obligations
01/03/83-09/02/84	FY83: \$101,500 TOTAL: \$101,500
Prin. Invest.	NASA Tech. Officer CASE Category
Colwell, R. N.	GSFC/Stuart, L. M. 49-Engn, NEC
	GSFC/Oseroff, H.

**NAS 5-25892 University of California - Berkeley 1647**  
Solar X-ray flare experiment for the International Solar Polar Mission

Period	Obligations
10/01/79-09/30/83	FY83: TOTAL: \$47,500
Prin. Invest.	NASA Tech. Officer CASE Category
Anderson, D. A.	GSFC/Porreca, G. 11-Astronomy
Lin, R. P.	GSFC/Cline, T. L.

**NAS 5-27592 University of California - Berkeley 1654**  
Cosmic Background Explorer (COBE) project science participation

Period	Obligations
05/01/83-12/31/89	FY83: \$95,000 TOTAL: \$95,000
Prin. Invest.	NASA Tech. Officer CASE Category
Smoot, G. F.	GSFC/Mather, J. C. 11-Astronomy
	GSFC/Nicholson, L. W.

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**NAS 8-32577 University of California - Berkeley 1655**  
Spacelab mission 1 experiment 95 far UV observations using the Faust instrument on the first Spacelab mission

Period	Obligations
05/10/77-06/30/84	FY83: \$324,702 TOTAL: \$1,201,202
Prin. Invest.	NASA Tech. Officer CASE Category
Bowyer, S.	MSFC/Jones, C. T. 31-Atmos Sci
Lampton, M.	MSFC/Eady, R.

**NAS 9-16413 University of California - Berkeley 1656**  
Development, implementation and evaluation of methods for incorporating expertise in analysis of remotely sensed and other data

Period	Obligations
11/01/81-03/31/83	FY83: TOTAL: \$99,900
Prin. Invest.	NASA Tech. Officer CASE Category
Colwell, R. N.	JSC/Wade, L. 29-Math/Computer, NEC

**NASW 3575 University of California - Berkeley 1657**  
Complete positive ions, electrons and ram negative ion measurements near comet Halley

Period	Obligations
03/15/82-09/30/86	FY83: \$135,991 TOTAL: \$330,991
Prin. Invest.	NASA Tech. Officer CASE Category
Lin, R. P.	HQ-EL/Brunk, W. E. 11-Astronomy
	HQ-EL/Brinton, H. C.

**NASW 3636 University of California - Berkeley 1658**  
Conduct an extreme ultraviolet (EUV) investigation for the extreme ultraviolet Explorer (EUVE) project

Period	Obligations
06/01/82-09/30/83	FY83: \$1,220,537 TOTAL: \$1,395,537
Prin. Invest.	NASA Tech. Officer CASE Category
Bowyer, S.	HQ-EZ/Weinreb, M. 49-Engr, NEC
	HQ-EZ/Newton, G.

**NCA 2-50006 University of California - Berkeley 1659**  
Microwave measurement of snow wetness accumulation

Period	Obligations
09/01/80-08/31/83	FY83: TOTAL: \$17,693
Prin. Invest.	NASA Tech. Officer CASE Category
Angelakos, D.	ARC/Linlor, W. I. 39-Env Sci, NEC

**NCA 2-50102 University of California - Berkeley 1660**  
Dynamics of the rings of Saturn

Period	Obligations
01/01/81-12/31/82	FY83: TOTAL: \$8,314
Prin. Invest.	NASA Tech. Officer CASE Category
Shu, F. H.	ARC/Cuzzi, J. N. 11-Astronomy

**NCA 2-50103 University of California - Berkeley 1661**  
Evaluation and assessment of methodology for estimating user requirements as a component of the energy needs design study

Period	Obligations
03/01/81-06/30/82	FY83: TOTAL: \$9,253
Prin. Invest.	NASA Tech. Officer CASE Category
Snow, T. P.	ARC/Norman, S. M. 39-Env Sci, NEC
	ARC/Padrick, B. D.

**NCA 2-50202 University of California - Berkeley 1662**  
Structure modeling of bacteriorhodopsin, a light converter in halobacterium halobium

Period	Obligations
10/01/81-09/30/83	FY83: \$21,569 TOTAL: \$41,613
Prin. Invest.	NASA Tech. Officer CASE Category
Packer, L.	ARC/MacElroy, R. D. 54-Env Biology

**NCA 2-50203 University of California - Berkeley 1663**  
Theoretical study of the hydromagnetic collapse of protostellar clouds

Period	Obligations
11/01/81-10/31/83	FY83: \$5,500 TOTAL: \$17,600
Prin. Invest.	NASA Tech. Officer CASE Category
Shu, F.	ARC/Cassen, P. M. 31-Atmos Sci
Terebey, S.	ARC/Black, D. C.

**NCA 2-50204 University of California - Berkeley 1664**  
Solvent interactions with nucleic acids: Effects on structure and interactions

Period	Obligations
01/01/82-12/31/83	FY83: \$29,997 TOTAL: \$59,875
Prin. Invest.	NASA Tech. Officer CASE Category
Tinoco, I.	ARC/MacElroy, R. D. 43-Chem Engr

**NCA 2-50205 University of California - Berkeley 1665**  
Determination of the amphibian dorsal-ventral axis by gravity and the hypogravity of spaceflight

Period	Obligations
07/01/82-06/30/84	FY83: \$23,158 TOTAL: \$29,158
Prin. Invest.	NASA Tech. Officer CASE Category
Thornton, J. R.	ARC/Souza, K. A. 51-Biological Sci

**NCC 2-36 University of California - Berkeley 1666**  
Selected target search for extra-terrestrial intelligence observations using very long base interferometry techniques and pattern recognition studies

Period	Obligations
10/16/79-10/31/83	FY83: \$75,180 TOTAL: \$238,586
Prin. Invest.	NASA Tech. Officer CASE Category
Bowyer, C. S.	ARC/Billingham, J. 99-Multi-Discip
Tarter, J.	ARC/Wolfe, J. H.

**NCC 2-54 University of California - Berkeley 1667**  
Irrigated lands assessments for water management

Period	Obligations
01/01/80-03/31/83	FY83: TOTAL: \$470,113
Prin. Invest.	NASA Tech. Officer CASE Category
Colwell, R. N.	ARC/Bauer, E. H. 19-Phys Sci, NEC

**NCC 2-67 University of California - Berkeley 1668**  
Control and modeling of a CELSS (controlled ecology life support system)

Period	Obligations
03/01/80-07/31/83	FY83: \$47,945 TOTAL: \$252,593
Prin. Invest.	NASA Tech. Officer CASE Category
Auslander, D. M.	ARC/MacElroy, R. D. 46-Mech Engr
Spear, R. C.	
Tomizuka, M.	

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**NCC 2-86 University of California - Berkeley 1669**  
Flight management systems

Period	Obligations
06/01/80-11/30/83	FY83: \$80,651 TOTAL: \$354,948
Prin. Invest.	NASA Tech. Officer CASE Category
Stark, L.	ARC/Ellis, S. R. 99-Multi-Discip

**NCC 2-142 University of California - Berkeley 1670**  
Detection, identification, and precise location of infrared objects

Period	Obligations
07/01/81-01/31/84	FY83: \$41,358 TOTAL: \$159,886
Prin. Invest.	NASA Tech. Officer CASE Category
Heiles, C. E.	ARC/Erickson, E. F. 11-Astronomy
Cohen, M.	ARC/Reynolds, R. T.

**NCC 2-163 University of California - Berkeley 1671**  
Viscometric and misting properties of polymer modified jet fuel

Period	Obligations
11/01/81-09/30/82	FY83: TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer CASE Category
Grens, E. A., II	ARC/Altman, R. L. 43-Chem Engr
Williams, M. C.	

**NCC 2-164 University of California - Berkeley 1672**  
Anti-misting additives for jet fuels

Period	Obligations
01/01/82-09/30/82	FY83: TOTAL: \$18,000
Prin. Invest.	NASA Tech. Officer CASE Category
Grens, E. A.	ARC/Aliman, R. L. 43-Chem Engr
Williams, M. C.	ARC/Parker, J. A.

**NCC 2-179 University of California - Berkeley 1673**  
Experiments on confined separated turbulent flow

Period	Obligations
01/01/82-10/31/83	FY83: \$30,000 TOTAL: \$75,496
Prin. Invest.	NASA Tech. Officer CASE Category
Holt, M.	ARC/Marvin, J. G. 41-Aero Engr
Brown, J. D.	ARC/Horstman, C. C.

**NCC 2-187 University of California - Berkeley 1674**  
Interaction of selected organic chemicals on membrane bound enzymes in the biological system

Period	Obligations
03/01/82-09/30/82	FY83: TOTAL: \$12,598
Prin. Invest.	NASA Tech. Officer CASE Category
Timiras, P. S.	ARC/Golub, M. A. 56-Medical Sciences
	ARC/Parker, J. A.

**NCC 2-205 University of California - Berkeley 1675**  
Remote sensing research for agricultural applications

Period	Obligations
08/01/82-12/31/83	FY83: \$92,200 TOTAL: \$162,200
Prin. Invest.	NASA Tech. Officer CASE Category
Colwell, R. N.	ARC/Bauer, E. H. 22-Computer Science
Wall, S. L.	ARC/Hlavka, C. A.

**NCC 2-257 University of California - Berkeley 1676**  
Control and modelling of a controlled ecology life support system (CELSS)

Period	Obligations
07/01/83-06/30/84	FY83: \$85,000 TOTAL: \$85,000
Prin. Invest.	NASA Tech. Officer CASE Category
Auslander, D. M.	ARC/MacElroy, R. D.
Spear, R.	29-Math/Computer, NEC

**NGL 05-003-017 University of California - Berkeley 1677**  
Investigation of high energy solar flare radiation and trapped radiation, including balloon-borne and sounding rocket tests of prototype detectors

Period	Obligations
04/08/83-07/31/83	FY83: TOTAL: \$2,195,942
Prin. Invest.	NASA Tech. Officer CASE Category
Anderson, K. A.	HQ-EE/Benson, R. F. 19-Phys Sci, NEC
	HQ-EE/Schmerling, E. R.

**NGL 05-003-272 University of California - Berkeley 1678**  
Research on radiation physics

Period	Obligations
03/01/88-02/28/84	FY83: \$38,000 TOTAL: \$1,274,380
Prin. Invest.	NASA Tech. Officer CASE Category
Townes, C. H.	HQ-EZ/Stencel, R. E. 11-Astronomy
Genzel, R.	HQ-EZ/Weiler, E. J.

**NGL 05-003-409 University of California - Berkeley 1679**  
Lunar sample analysis

Period	Obligations
01/26/71-05/31/83	FY83: TOTAL: \$1,464,192
Prin. Invest.	NASA Tech. Officer CASE Category
Reynolds, J. H.	JSC/Dietrich, J. W. 13-Physics

**NGL 05-003-497 University of California - Berkeley 1680**  
Research in space sciences

Period	Obligations
04/05/72-04/30/84	FY83: \$200,000 TOTAL: \$2,665,000
Prin. Invest.	NASA Tech. Officer CASE Category
Price, P. B.	HQ-E/Rosendhal, J. D. 13-Physics
	HQ-EP/Devlin, J.

**NGR 05-003-376 University of California - Berkeley 1681**  
High resolution studies of cosmic rays and solar particles

Period	Obligations
04/16/71-11/30/83	FY83: \$113,000 TOTAL: \$1,191,000
Prin. Invest.	NASA Tech. Officer CASE Category
Price, P. B.	HQ-EZ/Kaluzienski, L. J. 11-Astronomy
Tarle, G.	HQ-EZ/Opp, A. G.

**NGR 05-003-450 University of California - Berkeley 1682**  
Study of X-ray emission from galactic and extragalactic sources with emphasis on soft and ultra-soft wavelengths

Period	Obligations
05/28/71-11/30/83	FY83: \$250,000 TOTAL: \$1,916,870
Prin. Invest.	NASA Tech. Officer CASE Category
Bowyer, C. S.	GSFC/Early, L. J. 11-Astronomy
	GSFC/Pless, R. H.

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**NGR 05-003-451 University of California - Berkeley 1683**  
Research in aeronautics and air transportation

Period	Obligations
03/15/71-01/31/82	FY83: TOTAL: \$702,996
Prin. Invest.	NASA Tech. Officer CASE Category
Holt, M.	ARC/Lee, G. 41-Aero Engr

**NGT 05-003-802 University of California - Berkeley 1691**  
Graduate student researchers program

Period	Obligations
09/01/82-05/31/84	FY83: \$12,800 TOTAL: \$23,600
Prin. Invest.	NASA Tech. Officer CASE Category
Shu, F. H.	HQ-LB/Owens, F. C. 11-Astronomy

**NGR 05-003-452 University of California - Berkeley 1684**  
Infrared spectra of planetary atmospheres

Period	Obligations
02/18/72-06/30/84	FY83: \$47,500 TOTAL: \$574,784
Prin. Invest.	NASA Tech. Officer CASE Category
Townes, C. H.	HQ-EL/Brunk, W. E. 11-Astronomy
	HQ-EL/Brinton, H. C.

**NGT 05-003-803 University of California - Berkeley 1692**  
NASA graduate student researchers program

Period	Obligations
08/24/83-08/23/84	FY83: \$10,936 TOTAL: \$10,936
Prin. Invest.	NASA Tech. Officer CASE Category
Townes, C. H.	HQ-LB/Owens, F. C. 13-Physics

**NGR 05-003-460 University of California - Berkeley 1685**  
The chemistry of living systems

Period	Obligations
07/21/71-10/31/83	FY83: \$87,090 TOTAL: \$988,393
Prin. Invest.	NASA Tech. Officer CASE Category
Jukes, J. H.	HQ-EB/Devincenzi, D. L. 12-Chemistry

**NSG 1637 University of California - Berkeley 1693**  
Integrated-optics cadmium/telluride electro optic modulator for the 10 UM region

Period	Obligations
08/01/79-09/30/82	FY83: TOTAL: \$103,320
Prin. Invest.	NASA Tech. Officer CASE Category
Chiao, R. Y.	LARC/Sachse, G. W. 13-Physics

**NGR 05-003-511 University of California - Berkeley 1686**  
Spectrographic observation of infrared lines

Period	Obligations
03/01/73-10/31/82	FY83: TOTAL: \$488,774
Prin. Invest.	NASA Tech. Officer CASE Category
Townes, C. H.	ARC/Haughney, L. C. 11-Astronomy

**NSG 7152 University of California - Berkeley 1694**  
Studies of solar system objects with the new Hat Creek millimeter wave length radio interferometer

Period	Obligations
07/01/75-10/31/82	FY83: TOTAL: \$237,889
Prin. Invest.	NASA Tech. Officer CASE Category
Welch, W. J.	HQ-EL/Brunk, W. E. 11-Astronomy
	HQ-EL/Brinton, H. C.

**NGR 05-003-513 University of California - Berkeley 1687**  
Heavy ion fragment experiments at the bevatron

Period	Obligations
10/01/73-12/31/83	FY83: \$100,000 TOTAL: \$1,279,520
Prin. Invest.	NASA Tech. Officer CASE Category
Heckman, H. H.	HQ-EZ/Kaluzienski, L. J. 11-Astronomy
	HQ-EZ/Opp, A. G.

**NSG 7205 University of California - Berkeley 1695**  
Far infrared all-sky survey

Period	Obligations
02/01/76-09/30/84	FY83: \$95,000 TOTAL: \$387,500
Prin. Invest.	NASA Tech. Officer CASE Category
Richards, P. L.	HQ-EZ/Bogges, N. W. 11-Astronomy
	HQ-EZ/Weiler, E. J.

**NGR 05-003-578 University of California - Berkeley 1688**  
Theoretical X-ray and gamma-ray astronomy

Period	Obligations
08/01/73-09/30/84	FY83: \$43,600 TOTAL: \$401,711
Prin. Invest.	NASA Tech. Officer CASE Category
Silk, J. I.	HQ-EZ/Stencel, R. E. 11-Astronomy
	HQ-EZ/Weiler, E. J.

**NSG 7220 University of California - Berkeley 1696**  
Remote sensing to selected problems within the state of California

Period	Obligations
05/01/76-04/30/83	FY83: TOTAL: \$1,090,000
Prin. Invest.	NASA Tech. Officer CASE Category
Colwell, R. N.	HQ-ET/Vitale, J. A. 39-Env Sci, NEC

**NGT 05-003-800 University of California - Berkeley 1689**  
Graduate student researchers program

Period	Obligations
05/01/81-04/30/83	FY83: TOTAL: \$21,100
Prin. Invest.	NASA Tech. Officer CASE Category
Shu, F. H.	HQ-LB/Carter, C. H. 21-Mathematics

**NGT 05-003-801 University of California - Berkeley 1690**  
Graduate student researchers program

Period	Obligations
07/01/81-06/30/84	FY83: \$12,920 TOTAL: \$34,760
Prin. Invest.	NASA Tech. Officer CASE Category
Auslander, D. M.	HQ-LB/Owens, F. C. 46-Mech Engr

**NSG 7262 University of California - Berkeley 1697**  
Primate hemodynamics and metabolism under conditions of weightlessness

Period	Obligations
07/01/76-11/30/83	FY83: \$100,000 TOTAL: \$561,841
Prin. Invest.	NASA Tech. Officer CASE Category
Pace, N.	HQ-EB/Halstead, T. W. 51-Biological Sci

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NSG 7336**                      **University of California - Berkeley**                      **1698**  
Gravity, body mass, and composition and metabolic rate  
*Period*    *Obligations*  
12/01/76-12/01/83                      FY83: \$90,000                      TOTAL: \$483,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Pace, N.                                      HQ-EB/Halstead, T. W. 51-Biological Sci  
Smith, A. H.

**NSG 7522**                      **University of California - Berkeley**                      **1699**  
Social issues and implications of remote sensing applications:  
Paradigms of technology transfer  
*Period*    *Obligations*  
01/01/79-08/31/82                      FY83:                      TOTAL: \$408,125  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Colwell, R. N.                                      HQ-ET/Tuyahov, A. J. 79-Soc Sci, NEC

**NSG 7527**                      **University of California - Berkeley**                      **1700**  
A balloon-borne high resolution X and gamma-ray spectrometer  
*Period*    *Obligations*  
02/01/79-10/31/83                      FY83: \$32,700                      TOTAL: \$160,537  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Lin, R. P.                                      HQ-EZ/Chipman, E. G. 13-Physics

**NSG 7592**                      **University of California - Berkeley**                      **1701**  
A balloon-borne high resolution X and gamma-ray spectrometer  
*Period*    *Obligations*  
05/01/79-04/30/83                      FY83:                      TOTAL: \$83,189  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Lin, R. P.                                      HQ-EZ/Kaluzienski, L. J. 11-Astronomy  
HQ-EZ/Opp, A. G.

**NAG 2-129**                      **University of California - Davis**                      **1702**  
Interaction of organic vapors and carbon containing synthetic  
fabrics  
*Period*    *Obligations*  
10/01/81-03/31/83                      FY83:                      TOTAL: \$20,499  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Smith, J. M.                                      ARC/Cagliostro, D. E. 39-Env Sci, NEC

**NAG 2-221**                      **University of California - Davis**                      **1703**  
Modeling pilot interaction with automated digital avionics sys-  
tems  
*Period*    *Obligations*  
01/01/83-12/31/83                      FY83: \$37,987                      TOTAL: \$37,987  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Hess, R. A.                                      ARC/Callas, G. P. 41-Aero Engr  
ARC/Denery, D. G.

**NAG 5-217**                      **University of California - Davis**                      **1704**  
Remote sensing of the costal ocean and a large lake basin  
*Period*    *Obligations*  
01/15/82-01/14/84                      FY83: \$94,683                      TOTAL: \$156,853  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Chanmugam, G.                                      GSFC/Rao, D. B. 33-Oceanography

**NAS 5-27577**                      **University of California - Davis**                      **1705**  
LANDSAT-D thematic mapper image dimensionality reduction  
and geometric correction accuracy  
*Period*    *Obligations*  
03/03/83-01/02/85                      FY83: \$60,000                      TOTAL: \$60,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Ford, G. E.                                      GSFC/Oseroff, H. 49-Engr, NEC

**NAS 8-34730**                      **University of California - Davis**                      **1706**  
Evaluation of airborne Doppler lidar wind measurements  
*Period*    *Obligations*  
05/17/82-05/31/84                      FY83: \$30,000                      TOTAL: \$80,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Carroll, J. J.                                      MSFC/Fitzgarrald, D. E. 31-Atmos Sci  
MSFC/Smith, G. T.

**NCA 2-180101**                      **University of California - Davis**                      **1707**  
Venusian saltation  
*Period*    *Obligations*  
06/15/81-06/15/83                      FY83:                      TOTAL: \$35,957  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
White, B. R.                                      ARC/Pollack, J. B. 32-Geological Sci

**NCA 2-180201**                      **University of California - Davis**                      **1708**  
Adaptive control and nonlinear systems  
*Period*    *Obligations*  
06/21/82-08/31/83                      FY83: \$4,960                      TOTAL: \$23,847  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Borges, C. R.                                      ARC/Meyer, G. 21-Mathematics

**NCA 2-180302**                      **University of California - Davis**                      **1709**  
Anatomical and biochemical aspects of muscle hypertrophy  
induced by passive stretch and of muscle atrophy following  
removal of passive stretch: Role of soluble growth factors  
*Period*    *Obligations*  
01/01/83-12/31/84                      FY83: \$29,568                      TOTAL: \$29,568  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Ashmore, C. R.                                      ARC/Ellis, S. 51-Biological Sci

**NCA 2-180303**                      **University of California - Davis**                      **1710**  
Chemistry and cytochemistry of tripeptidyl esterase activity  
*Period*    *Obligations*  
02/01/83-01/31/84                      FY83: \$29,988                      TOTAL: \$29,988  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Ashmore, C. R.                                      ARC/Ellis, S. 51-Biological Sci

**NCA 2-180905**                      **University of California - Davis**                      **1711**  
Development of a special purpose system for assessment of  
24-hour biorhythm desynchronization and its effects on performance  
and psychological state  
*Period*    *Obligations*  
07/01/79-03/31/82                      FY83:                      TOTAL: \$38,796  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Chapman, L. F.                                      ARC/Winget, C. M. 51-Biological Sci



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**NCC 2-99 University of California - Davis 1712**  
Selection of crop varieties for efficient production using urea, ammonia, nitrite, and nitrate in the closed environmental life support system

Period	Obligations
10/01/80-11/30/83	FY83: \$65,000 TOTAL: \$213,904
Prin. Invest.	NASA Tech. Officer CASE Category
Huffaker, R. C.	ARC/Zill, L. P. 55-Agriculture Sci
Rains, D. W.	
Qualset, C. O.	

**NCC 2-186 University of California - Davis 1713**  
Reynolds-stress model for compressible flows

Period	Obligations
04/01/82-03/31/84	FY83: \$29,050 TOTAL: \$43,130
Prin. Invest.	NASA Tech. Officer CASE Category
Kollmann, W.	ARC/Rubesin, M. W. 41-Aero Engr
Minh, H. H.	ARC/Viegas, J. R.

**NCC 2-241 University of California - Davis 1714**  
Identification of pilot describing functions from flight test and simulation data

Period	Obligations
04/01/83-03/31/85	FY83: \$44,253 TOTAL: \$44,253
Prin. Invest.	NASA Tech. Officer CASE Category
Hess, R. A.	ARC/Berry, D. T. 41-Aero Engr

**NCC 2-252 University of California - Davis 1715**  
Numerical and experimental studies of particle flow in a high-pressure boundary layer wind tunnel

Period	Obligations
06/15/83-06/14/84	FY83: \$6,000 TOTAL: \$6,000
Prin. Invest.	NASA Tech. Officer CASE Category
White, B. R.	ARC/Summers, A. L. 32-Geological Sci

**NCC 2-264 University of California - Davis 1716**  
Differences in interfacial bond strengths of graphite fiber-epoxy resin composites

Period	Obligations
08/01/83-01/31/84	FY83: \$15,372 TOTAL: \$15,372
Prin. Invest.	NASA Tech. Officer CASE Category
Needles, H. L.	ARC/Cagliostro, D. E. 43-Chem Engr

**NGT 05-004-800 University of California - Davis 1717**  
Graduate student researchers program

Period	Obligations
06/01/82-05/31/84	FY83: \$12,300 TOTAL: \$21,500
Prin. Invest.	NASA Tech. Officer CASE Category
Horowitz, J. M.	HQ-LB/Owens, F. C. 51-Biological Sci

**NGT 05-004-801 University of California - Davis 1718**  
NASA graduate student researchers program

Period	Obligations
07/01/83-06/40/84	FY83: \$12,350 TOTAL: \$12,350
Prin. Invest.	NASA Tech. Officer CASE Category
Bernauer, E.	HQ-LB/Owens, F. C. 51-Biological Sci

**NSG 2234 University of California - Davis 1719**  
Thermoregulation in rats: Effects of hypergravity and norepinephrine

Period	Obligations
07/01/77-03/31/84	FY83: \$30,000 TOTAL: \$149,611
Prin. Invest.	NASA Tech. Officer CASE Category
Horowitz, J. M.	HQ-EB/Halstead, T. W. 51-Biological Sci

**NSG 7493 University of California - Davis 1720**  
Avian embryonic development in hyperdynamic environments

Period	Obligations
10/01/78-04/30/82	FY83: TOTAL: \$163,214
Prin. Invest.	NASA Tech. Officer CASE Category
Abbott, U. K.	HQ-EB/Halstead, T. W. 51-Biological Sci
Smith, A. H.	

**NCA 2-280001 University of California - Hastings Col. 1721**  
A joint venture between the NASA-ARC and the Hastings College of Law to encourage and support basic, exploratory and applied legal research of mutual benefit to the parties

Period	Obligations
09/25/80-12/31/83	FY83: \$161,000 TOTAL: \$462,459
Prin. Invest.	NASA Tech. Officer CASE Category
Henke, D. F.	ARC/Glazer, J. H. 99-Multi-Discip
Kerr, T. R.	ARC/Brekke, D. G.

**NAG 2-107 University of California - Irvine 1722**  
Mitochondrial and contractile function in disuse atrophied skeletal muscle

Period	Obligations
04/01/81-03/31/84	FY83: \$33,000 TOTAL: \$136,000
Prin. Invest.	NASA Tech. Officer CASE Category
Baldwin, K. M.	ARC/Ellis, S. 51-Biological Sci

**NAG 3-176 University of California - Irvine 1723**  
Effect of liquid droplets on turbulence structure in a round gaseous jet

Period	Obligations
06/01/81-03/30/84	FY83: \$53,392 TOTAL: \$143,365
Prin. Invest.	NASA Tech. Officer CASE Category
Elghobashi, S.	LERC/Tacina, R. R. 46-Mech Engr

**NAG 3-250 University of California - Irvine 1724**  
Interactions of electromagnetic radiation with surface polaritons

Period	Obligations
01/06/82-01/04/84	FY83: \$54,345 TOTAL: \$79,620
Prin. Invest.	NASA Tech. Officer CASE Category
Mills, D. L.	LERC/Anderson, L. M. 13-Physics

**NAG 3-322 University of California - Irvine 1725**  
Light scattering studies of surface plasmons and other SEW's

Period	Obligations
09/15/82-09/14/83	FY83: TOTAL: \$65,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ushioda, S.	LERC/Anderson, L. M. 13-Physics

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**NAGW 93**                      **University of California - Irvine**                      **1726**  
Research in solar plasma theory

Period	Obligations
06/01/80-07/14/84	FY83: \$125,341      TOTAL: \$367,505
Prin. Invest.	NASA Tech. Officer      CASE Category
Hoven, G. V.	HQ-EE/Butler, D. M.      13-Physics
Steinolfson, R. S.	HQ-EE/Birmingham, T. J.

**NGR 05-041-012**                      **University of California - Irvine**                      **1733**  
Diagnosis of preclinical viral illness and prophylaxis against viral disease

Period	Obligations
07/13/71-02/29/84	FY83: \$25,000      TOTAL: \$417,342
Prin. Invest.	NASA Tech. Officer      CASE Category
Tilles, J. G.	ARC/Mandel, A. D. 56-Medical Sciences

**NAGW 109**                      **University of California - Irvine**                      **1727**  
A theoretical study of the X-ray emission from clusters of galaxies

Period	Obligations
11/01/80-11/30/82	FY83:      TOTAL: \$11,046
Prin. Invest.	NASA Tech. Officer      CASE Category
Tucker, W. H.	HQ-EZ/Kaluzienski, L. J.      11-Astronomy
	HQ-EZ/Opp, A. G.

**NSG 7208**                      **University of California - Irvine**                      **1734**  
Gas phase reactions of chlorine and fluorine compound of interest for stratospheric chemistry

Period	Obligations
01/01/76-09/30/82	FY83:      TOTAL: \$587,028
Prin. Invest.	NASA Tech. Officer      CASE Category
Molina, M. J.	HQ-EB/Watson, R. T.      31-Atmos Sci
	HQ-EB/Tilford, S. G.

**NAGW 212**                      **University of California - Irvine**                      **1728**  
Models of energy transformation during the early evolution of life

Period	Obligations
06/01/81-12/31/83	FY83: \$38,000      TOTAL: \$183,186
Prin. Invest.	NASA Tech. Officer      CASE Category
Lanyi, T. K.	HQ-EB/Devincenzi, D. L.
	HQ-EB/Rambler, M.      51-Biological Sci

**NSG 7375**                      **University of California - Irvine**                      **1735**  
Coronal plasma structures

Period	Obligations
06/01/77-10/31/83	FY83: \$55,365      TOTAL: \$280,644
Prin. Invest.	NASA Tech. Officer      CASE Category
Van Hoven, G.	HQ-EZ/Chipman, E. G.      13-Physics

**NAGW 452**                      **University of California - Irvine**                      **1729**  
Latitudinal gradients in tropospheric concentrations of selected halocarbons and hydrocarbons

Period	Obligations
03/15/83-03/14/84	FY83: \$119,000      TOTAL: \$119,000
Prin. Invest.	NASA Tech. Officer      CASE Category
Rowland, F. S.	HQ-EE/Watson, R. T.      31-Atmos Sci
	HQ-EE/Hilsenrath, E.

**NAG 1-267**                      **University of California - Los Angeles**                      **1736**  
Molecular beam epitaxy grown silicon-silicon germanium layered structures

Period	Obligations
05/01/82-04/30/84	FY83: \$71,051      TOTAL: \$141,980
Prin. Invest.	NASA Tech. Officer      CASE Category
Allen, F. G.	LARC/Fripp, A. L.      45-Elec Engr
Pan, D. S.	LARC/Crouch, R. K.

**NAGW 467**                      **University of California - Irvine**                      **1730**  
Ultraviolet photolysis of ions of stratospheric importance

Period	Obligations
06/01/83-05/31/84	FY83: \$85,000      TOTAL: \$85,000
Prin. Invest.	NASA Tech. Officer      CASE Category
Rowland, F. S.	HQ-EE/Watson, R. T.      31-Atmos Sci
	HQ-EE/Hilsenrath, E.

**NAG 1-270**                      **University of California - Los Angeles**                      **1737**  
A program to develop a shock-capturing finite difference algorithm

Period	Obligations
05/15/82-02/29/84	FY83: \$28,200      TOTAL: \$43,200
Prin. Invest.	NASA Tech. Officer      CASE Category
Osher, S. J.	LARC/Rudy, D. H.      41-Aero Engr
	LARC/Dwoyer, D. L.

**NAS 2-10522**                      **University of California - Irvine**                      **1731**  
Life science experiment ARC 781-127, effect of zero-gravity on biochemical and metabolic properties of skeletal muscle

Period	Obligations
01/15/80-11/12/82	FY83: \$60,631      TOTAL: \$97,646
Prin. Invest.	NASA Tech. Officer      CASE Category
Baldwin, K. M.	ARC/Ferandin, J. A.      51-Biological Sci
	ARC/Sebesta, P. D.

**NAG 1-273**                      **University of California - Los Angeles**                      **1738**  
Numerical solution of the full potential equation

Period	Obligations
06/30/82-08/31/84	FY83: \$55,000      TOTAL: \$108,158
Prin. Invest.	NASA Tech. Officer      CASE Category
Osher, S. J.	LARC/Whitlow, W., Jr.      41-Aero Engr
Engquist, B.	LARC/Bland, S. R.

**NCA 2-345301**                      **University of California - Irvine**                      **1732**  
Mathematical characterization and display application of quasi-random image sampling systems

Period	Obligations
01/01/83-12/31/83	FY83: \$18,822      TOTAL: \$18,822
Prin. Invest.	NASA Tech. Officer      CASE Category
Yellott, J.	ARC/Ahumada, A. J., Jr. 69-Psych, NEC
	ARC/Nagel, D. C.

**NAG 2-41**                      **University of California - Los Angeles**                      **1739**  
Graduate student researchers program simulation

Period	Obligations
05/01/80-09/30/82	FY83:      TOTAL: \$37,493
Prin. Invest.	NASA Tech. Officer      CASE Category
Karplus, W. J.	ARC/Raby, J. S.      22-Computer Science

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**NAG 2-116 University of California - Los Angeles 1740**  
A study of aeroelastic and structural dynamic effects in multi-rotor systems with application to hybrid heavy lift vehicles

Period	Obligations
05/01/81-12/31/83	FY83: TOTAL: \$107,000
Prin. Invest.	NASA Tech. Officer CASE Category
Friedmann, P. P.	ARC/Miura, H. 41-Aero Engr

**NAG 2-209 University of California - Los Angeles 1741**  
Unsteady aerodynamics for finite-time arbitrary motion of rotor blades in frequency and time domain

Period	Obligations
09/01/82-10/31/83	FY83: \$45,967 TOTAL: \$45,967
Prin. Invest.	NASA Tech. Officer CASE Category
Friedmann, P. P.	ARC/Warmbrodt, W. 41-Aero Engr
	ARC/Johnson, W.

**NAG 2-214 University of California - Los Angeles 1742**  
Flow/surface interaction experiments

Period	Obligations
12/01/82-11/30/83	FY83: \$15,500 TOTAL: \$15,500
Prin. Invest.	NASA Tech. Officer CASE Category
Meecham, W. C.	ARC/Soderman, P. T. 41-Aero Engr

**NAG 2-216 University of California - Los Angeles 1743**  
Model-based approaches for partitioning subjective workload assessments

Period	Obligations
01/01/83-12/31/83	FY83: \$36,000 TOTAL: \$36,000
Prin. Invest.	NASA Tech. Officer CASE Category
Lyman, D. J.	ARC/Hart, S. G. 69-Psych, NEC

**NAG 2-226 University of California - Los Angeles 1744**  
Optimal design of rotor blade for vibration reduction in forward flight

Period	Obligations
03/01/83-10/31/83	FY83: \$28,000 TOTAL: \$28,000
Prin. Invest.	NASA Tech. Officer CASE Category
Friedmann, P. P.	ARC/Miura, H. 41-Aero Engr
	ARC/Gelhausen, P. A.

**NAG 3-132 University of California - Los Angeles 1745**  
Data flow computing approach in high speed digital simulation

Period	Obligations
12/15/80-12/12/82	FY83: TOTAL: \$104,492
Prin. Invest.	NASA Tech. Officer CASE Category
Ercegovac, M. D.	LERC/Milner, E. J. 22-Computer Science
Karplus, W. J.	LERC/Szuch, J. R.

**NAG 3-295 University of California - Los Angeles 1746**  
Ceramic-to-metal bonding for pressure transducers

Period	Obligations
06/30/82-06/29/83	FY83: TOTAL: \$52,795
Prin. Invest.	NASA Tech. Officer CASE Category
McKenzie, J. D.	LERC/Barranger, J. P. 47-Materials Engr

**NAG 3-358 University of California - Los Angeles 1747**  
A data flow multiprocessor for highspeed digital simulation

Period	Obligations
11/25/82-11/23/84	FY83: \$140,000 TOTAL: \$140,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ercegovac, M. D.	LERC/Milner, E. J. 22-Computer Science
Karplus, W. J.	LERC/Szuch, J. R.

**NAG 3-451 University of California - Los Angeles 1748**  
Thin film temperature sensor

Period	Obligations
08/01/83-07/31/84	FY83: \$70,000 TOTAL: \$70,000
Prin. Invest.	NASA Tech. Officer CASE Category
Bunshah, R. F.	LERC/Holanda, R. 47-Materials Engr

**NAG 5-112 University of California - Los Angeles 1749**  
Observations of selected astronomical emission lines

Period	Obligations
10/01/80-09/30/82	FY83: TOTAL: \$3,570
Prin. Invest.	NASA Tech. Officer CASE Category
Plavec, M. J.	GSFC/Corrigan, J. P. 11-Astronomy

**NAG 5-116 University of California - Los Angeles 1750**  
Observations of interstellar cloud densities and detection of interstellar neutral chlorine

Period	Obligations
10/01/80-08/31/82	FY83: TOTAL: \$2,985
Prin. Invest.	NASA Tech. Officer CASE Category
Jura, M. A.	GSFC/Corrigan, J. P. 11-Astronomy

**NAG 5-152 University of California - Los Angeles 1751**  
Thermal isotacy in the world's oceans

Period	Obligations
04/01/81-06/30/84	FY83: \$30,000 TOTAL: \$107,758
Prin. Invest.	NASA Tech. Officer CASE Category
Schubert, G.	GSFC/Welker, J. 32-Geological Sci

**NAG 5-210 University of California - Los Angeles 1752**  
Reddening measurements for Seyfert 1 galaxies

Period	Obligations
11/01/81-04/30/83	FY83: TOTAL: \$7,240
Prin. Invest.	NASA Tech. Officer CASE Category
Grandi, S. A.	GSFC/Kondo, Y. 11-Astronomy

**NAG 5-317 University of California - Los Angeles 1753**  
Analysis of satellite-to-satellite range-rate data

Period	Obligations
05/15/83-05/14/84	FY83: \$30,000 TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer CASE Category
Kaula, W.	GSFC/Welker, J. E. 32-Geological Sci

**NAG 9-15 University of California - Los Angeles 1754**  
Eu neutron capture, regolith dynamics and lunar stratigraphy

Period	Obligations
02/01/81-01/31/84	FY83: TOTAL: \$48,500
Prin. Invest.	NASA Tech. Officer CASE Category
Depaolo, D. J.	JSC/Dietrich, J. W. 99-Multi-Discip

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**NAG 9-27 University of California - Los Angeles 1755**  
Isotopic analysis of light elements in extraterrestrial materials

Period	Obligations	
02/01/83-01/31/84	FY83: \$45,776	TOTAL: \$45,776
Prin. Invest.	NASA Tech. Officer	CASE Category
Kerridge, J. F.	JSC/Dietrich, J. W.	12-Chemistry
Kaplan, I. R.		

**NAG 9-40 University of California - Los Angeles 1756**  
Geochemical studies of lunar materials

Period	Obligations	
02/01/83-01/31/84	FY83: \$175,000	TOTAL: \$175,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wasson, J. T.	JSC/Dietrich, J. W.	32-Geological Sci

**NAGW 78 University of California - Los Angeles 1757**  
Space plasma physics theory and simulation

Period	Obligations	
07/01/80-06/30/84	FY83: \$235,353	TOTAL: \$818,353
Prin. Invest.	NASA Tech. Officer	CASE Category
Abdulla, M. A.	HQ-EE/Butler, D. M.	39-Env Sci, NEC

**NAGW 80 University of California - Los Angeles 1758**  
Theoretical studies of extragalactic grains

Period	Obligations	
10/01/80-10/31/84	FY83: \$25,486	TOTAL: \$127,348
Prin. Invest.	NASA Tech. Officer	CASE Category
Jura, M. A.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Bogges, N. W.	

**NAGW 87 University of California - Los Angeles 1759**  
Theoretical studies of the plasma environments of Jupiter and Saturn, their magnetospheres and their satellites

Period	Obligations	
07/01/80-09/30/83	FY83:	TOTAL: \$177,829
Prin. Invest.	NASA Tech. Officer	CASE Category
Siscoe, G. L.	HQ-EL/Brinton, H. C.	31-Atmos Sci

**NAGW 104 University of California - Los Angeles 1760**  
High-pressure cosmochemistry applied to major planetary interiors: Experimental studies

Period	Obligations	
11/01/80-01/31/84	FY83: \$55,368	TOTAL: \$166,433
Prin. Invest.	NASA Tech. Officer	CASE Category
Nicol, M. F.	HQ-EL/Quaide, W. L.	11-Astronomy
	HQ-EL/French, B. M.	

**NAGW 162 University of California - Los Angeles 1761**  
Studies of the Jovian magnetopause and boundary layer

Period	Obligations	
04/01/81-03/31/84	FY83: \$32,000	TOTAL: \$96,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Walker, R. J.	HQ-EE/Lynch, J. T.	13-Physics
Kivelson, M.	HQ-EE/Evans, N.	

**NAGW 180 University of California - Los Angeles 1762**  
Turbulence in plasma with magnetic null points

Period	Obligations	
04/01/81-03/31/84	FY83: \$55,000	TOTAL: \$155,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Stenzel, R. L.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EE/Wiskerchein, M. J.	

**NAGW 311 University of California - Los Angeles 1763**  
General availability of Mars infrared data

Period	Obligations	
04/01/82-03/31/83	FY83:	TOTAL: \$29,952
Prin. Invest.	NASA Tech. Officer	CASE Category
Russell, C. T.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/Boyce, J. M.	

**NAGW 333 University of California - Los Angeles 1764**  
Interpretation of Jovian plasma data

Period	Obligations	
04/01/82-06/30/84	FY83: \$25,000	TOTAL: \$52,867
Prin. Invest.	NASA Tech. Officer	CASE Category
Siscoe, G. L.	HQ-EL/Quaide, W. L.	19-Phys Sci, NEC
	HQ-EE/Evans, N.	

**NAGW 347 University of California - Los Angeles 1765**  
Isotopic characteristics of prebiotic synthesis of organic matter

Period	Obligations	
07/01/82-12/31/83	FY83: \$25,000	TOTAL: \$72,309
Prin. Invest.	NASA Tech. Officer	CASE Category
Kerridge, J. F.	HQ-EB/Geib, D.	12-Chemistry

**NAGW 472 University of California - Los Angeles 1766**  
Theoretical studies in typort of a solar seismology mission

Period	Obligations	
06/01/83-10/31/83	FY83: \$46,492	TOTAL: \$46,492
Prin. Invest.	NASA Tech. Officer	CASE Category
Ulrich, R. K.	HQ-EZ/Chipman, E.	13-Physics

**NAS 1-16674 University of California - Los Angeles 1767**  
Stratospheric calibration of the quartz crystal microbalance (QCM)

Period	Obligations	
05/26/81-03/31/84	FY83: \$24,000	TOTAL: \$41,062
Prin. Invest.	NASA Tech. Officer	CASE Category
Friedlander, S. K.	LARC/Woods, D. C.	31-Atmos Sci
Hering, S. V.		

**NAS 2-9491 University of California - Los Angeles 1768**  
Pioneer Venus data analysis of magnetic fields experiment

Period	Obligations	
08/01/77-09/30/83	FY83: \$308,057	TOTAL: \$1,368,084
Prin. Invest.	NASA Tech. Officer	CASE Category
Russell, C. T.	ARC/Fimmel, R. O.	31-Atmos Sci
	ARC/Dyer, J. W.	

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**NAS 5-25039 University of California - Los Angeles 1769**  
Theory formulation and analysis support for the Dynamics Explorer (DE) project

Period	Obligations
08/08/78-09/30/84	FY83: \$96,000 TOTAL: \$238,000
Prin. Invest.	NASA Tech. Officer CASE Category
Maggs, J. E.	GSFC/Bullock, G. D. 13-Physics

**NAS 5-25657 University of California - Los Angeles 1770**  
Space telescope/high resolution spectrograph interstellar medium studies

Period	Obligations
04/25/79-01/31/85	FY83: TOTAL: \$25,974
Prin. Invest.	NASA Tech. Officer CASE Category
Jura, M. A.	GSFC/Vitagliano, H. D. 11-Astronomy

**NAS 5-25772 University of California - Los Angeles 1771**  
International Sun-Earth Explorers A and B data reduction and analysis for the magnetic field investigation

Period	Obligations
11/01/79-09/30/84	FY83: \$296,000 TOTAL: \$1,305,978
Prin. Invest.	NASA Tech. Officer CASE Category
Russell, C. T.	GSFC/Wales, R. O. 11-Astronomy

**NAS 5-26846 University of California - Los Angeles 1772**  
Magnetic field investigation for the polar plasma laboratory of the origin of plasmas in the Earth's neighborhood mission

Period	Obligations
06/11/82-09/15/84	FY83: \$75,973 TOTAL: \$105,973
Prin. Invest.	NASA Tech. Officer CASE Category
Russell, C. T.	GSFC/O'Brien, J. J. 19-Phys Sci, NEC

**NAS 5-26852 University of California - Los Angeles 1773**  
A magnetic field investigation for the equatorial magnetospheric laboratory

Period	Obligations
06/11/82-09/15/84	FY83: \$66,438 TOTAL: \$86,438
Prin. Invest.	NASA Tech. Officer CASE Category
McPherron, R. L.	GSFC/O'Brien, J. J. 13-Physics

**NAS 5-26871 University of California - Los Angeles 1774**  
Development of theoretical technology for origin of plasmas in the Earth's neighborhood (OPEN)

Period	Obligations
05/03/82-09/15/84	FY83: \$27,099 TOTAL: \$56,099
Prin. Invest.	NASA Tech. Officer CASE Category
Ashour-abdalla, G. M.	GSFC/O'Brien, J. J. 13-Physics

**NAS 5-26895 University of California - Los Angeles 1775**  
Investigation southern California tectonic deformation

Period	Obligations
04/02/82-04/01/84	FY83: \$46,992 TOTAL: \$91,992
Prin. Invest.	NASA Tech. Officer CASE Category
Jackson, D. D.	GSFC/Mead, G. D. 32-Geological Sci
Davis, P. M.	

**NAS 5-26957 University of California - Los Angeles 1776**  
Testing of hypotheses in crustal dynamics using very long baseline interferometry (VLBI) and satellite laser ranging (SLR) data from California

Period	Obligations
05/07/82-05/07/84	FY83: TOTAL: \$37,537
Prin. Invest.	NASA Tech. Officer CASE Category
Bird, G. P.	GSFC/Mead, G. D. 32-Geological Sci

**NAS 5-26994 University of California - Los Angeles 1777**  
Data analysis studies for COBE

Period	Obligations
03/01/82-07/01/83	FY83: TOTAL: \$35,512
Prin. Invest.	NASA Tech. Officer CASE Category
Wright, E. L.	GSFC/Mather, J. C. 11-Astronomy
	GSFC/Donohoe, M. J.

**NAS 5-27670 University of California - Los Angeles 1778**  
Data analysis studies and algorithm development for the COBE satellite

Period	Obligations
06/28/83-12/31/89	FY83: \$35,000 TOTAL: \$35,000
Prin. Invest.	NASA Tech. Officer CASE Category
Wright, E. L.	GSFC/Mather, J. C. 11-Astronomy

**NCA 2-390202 University of California - Los Angeles 1779**  
Computational fluid dynamics for problems involving shocks and boundaries

Period	Obligations
04/01/82-03/31/84	FY83: \$18,000 TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer CASE Category
Osher, S.	ARC/Warming, R. 29-Math/Computer, NEC
Engquist, B.	ARC/Beam, R.

**NCA 2-390301 University of California - Los Angeles 1780**  
Weight evaluation of joined wing

Period	Obligations
10/01/82-10/31/83	FY83: \$10,000 TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer CASE Category
Schmit, L. A.	ARC/Miura, H. 41-Aero Engr
Hagala, P.	

**NCC 2-84 University of California - Los Angeles 1781**  
Vapor-liquid phase separator

Period	Obligations
03/01/80-10/31/83	FY83: TOTAL: \$47,236
Prin. Invest.	NASA Tech. Officer CASE Category
Frederking, T. H.	ARC/Vorreiter, J. W. 46-Mech Engr
	ARC/Kittel, P.

**NCC 2-104 University of California - Los Angeles 1782**  
Biological control system for extracellular fluid volume regulation

Period	Obligations
11/01/80-10/31/83	FY83: \$87,300 TOTAL: \$267,300
Prin. Invest.	NASA Tech. Officer CASE Category
Bricker, N. S.	ARC/Sandler, H. 59-Life Sci, NEC

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**NCC 2-156 University of California - Los Angeles 1783**  
High-temperature absorption spectra

Period	Obligations	
10/01/81-12/31/83	FY83: TOTAL: \$37,583	
Prin. Invest.	NASA Tech. Officer	CASE Category
Heller, E. J.	ARC/Arnold, J. O.	12-Chemistry
	ARC/Jaffe, R. L.	

**NGL 05-007-002 University of California - Los Angeles 1784**  
Theoretical evaluation of the internal structures and atmospheres of planets and the Moon

Period	Obligations	
01/01/62-01/31/84	FY83: \$38,100 TOTAL: \$1,077,766	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kaula, W. M.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

**NGL 05-007-004 University of California - Los Angeles 1785**  
Theoretical and experimental investigations of particles and fields in space, including construction of prototype instrumentation

Period	Obligations	
03/01/62-09/30/83	FY83: TOTAL: \$3,409,474	
Prin. Invest.	NASA Tech. Officer	CASE Category
Coleman, P. J., Jr.	HQ-EE/Wiskerchen, M. J.	39-Env Sci, NEC
	HQ-EE/Schmerling, E. R.	

**NGL 05-007-190 University of California - Los Angeles 1786**  
Theoretical space plasma physics

Period	Obligations	
06/27/68-10/31/83	FY83: \$115,000 TOTAL: \$970,046	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kennel, C. F.	HQ-EE/Lynch, J. T.	19-Phys Sci, NEC
	HQ-EE/Schmerling, E. R.	

**NGL 05-007-367 University of California - Los Angeles 1787**  
Lunar sample analysis

Period	Obligations	
06/30/72-05/31/83	FY83: TOTAL: \$800,570	
Prin. Invest.	NASA Tech. Officer	CASE Category
Wasson, J. T.	JSC/Dietrich, J. W.	12-Chemistry

**NGR 05-007-221 University of California - Los Angeles 1788**  
Nature and changes of organic matter in deep ocean cores

Period	Obligations	
08/08/69-01/31/84	FY83: \$85,083 TOTAL: \$907,273	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kaplan, I. R.	HQ-EB/Devincenzi, D. L.	32-Geological Sci

**NGR 05-007-289 University of California - Los Angeles 1789**  
Lunar sample analysis

Period	Obligations	
12/29/70-05/31/83	FY83: TOTAL: \$840,709	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kerridge, J. F.	JSC/Dietrich, J. W.	13-Physics

**NGR 05-007-317 University of California - Los Angeles 1790**  
Photogeologic interpretation of Mariner Mars 1969 imagery

Period	Obligations	
03/09/71-06/30/83	FY83: TOTAL: \$217,765	
Prin. Invest.	NASA Tech. Officer	CASE Category
Schubert, G.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NGR 05-007-328 University of California - Los Angeles 1791**  
Numerical modeling of the global atmosphere and the world oceans

Period	Obligations	
08/15/71-05/15/83	FY83: TOTAL: \$549,649	
Prin. Invest.	NASA Tech. Officer	CASE Category
Suarez, J.	GSFC/Halem, M.	31-Atmos Sci

**NGR 05-007-329 University of California - Los Angeles 1792**  
Elemental variations in genetically related meteorites

Period	Obligations	
04/27/71-03/01/84	FY83: \$51,856 TOTAL: \$737,952	
Prin. Invest.	NASA Tech. Officer	CASE Category
Wasson, J. T.	HQ-EL/French, B. M.	32-Geological Sci
	HQ-EL/Quaide, W. L.	

**NGR 05-007-407 University of California - Los Angeles 1793**  
Paleobiologic studies of the antiquity and Precambrian evolution of life

Period	Obligations	
04/10/73-01/31/84	FY83: \$55,393 TOTAL: \$379,019	
Prin. Invest.	NASA Tech. Officer	CASE Category
Schopf, J. W.	HQ-EB/Devincenzi, D. L.	32-Geological Sci

**NSG 1490 University of California - Los Angeles 1794**  
Fundamental studies of methods for structural synthesis

Period	Obligations	
02/01/80-09/30/85	FY83: \$99,600 TOTAL: \$557,299	
Prin. Invest.	NASA Tech. Officer	CASE Category
Schmit, L. A., Jr.	LARC/Sobieski, J.	49-Engr, NEC

**NSG 1578 University of California - Los Angeles 1795**  
Response studies of rotors and rotor blades with applications to aeroelastic tailoring

Period	Obligations	
12/01/78-11/30/82	FY83: TOTAL: \$231,177	
Prin. Invest.	NASA Tech. Officer	CASE Category
Friedmann, P.	LARC/Young, W. H.	41-Aero Engr

**NSG 2290 University of California - Los Angeles 1796**  
Research program in jet/surface interactions

Period	Obligations	
11/01/77-10/31/83	FY83: TOTAL: \$100,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Meecham, W. C.	ARC/Soderman, P.	41-Aero Engr

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**NSG 3236 University of California - Los Angeles 1797**  
Investigations of the interaction between a grazing flow over a Helmholtz resonator orifice and the acoustically induced velocity in it

Period	Obligations
11/14/78-06/30/83	FY83: TOTAL: \$121,496
Prin. Invest.	NASA Tech. Officer CASE Category
Charwat, A. F.	LERC/Rice, E. J. 13-Physics
Monkewitz, P. A.	LERC/Baumeister, K. J.
Walker, B. E.	

**NSG 4015 University of California - Los Angeles 1798**  
Modelling, identification and control with applications to flight vehicles

Period	Obligations
02/01/78-01/31/86	FY83: \$53,530 TOTAL: \$347,479
Prin. Invest.	NASA Tech. Officer CASE Category
Balakrishnan, A. V.	DFRF/Illiff, K. W. 41-Aero Engr

**NSG 4024 University of California - Los Angeles 1799**  
Models for numerical simulation of gravity waves and clear air turbulence formation

Period	Obligations
05/01/79-10/31/83	FY83: \$40,937 TOTAL: \$133,476
Prin. Invest.	NASA Tech. Officer CASE Category
Wurtele, M. G.	DFRF/Ehernberger, L. J. 31-Atmos Sci
Sharman, R. D.	

**NSG 4027 University of California - Los Angeles 1800**  
System study for the application of microcomputers to research flight test techniques

Period	Obligations
06/01/82-05/31/84	FY83: \$30,000 TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer CASE Category
Smyth, R. K.	DFRF/Abbott, L. W. 45-Elec Engr
	DFRF/Petersen, K. L.

**NSG 5263 University of California - Los Angeles 1801**  
Earth dynamics analyses

Period	Obligations
03/15/78-10/31/84	FY83: \$30,000 TOTAL: \$324,897
Prin. Invest.	NASA Tech. Officer CASE Category
Kaula, W. M.	GSFC/Welker, J. 32-Geological Sci
Ernst, W. G.	

**NSG 5272 University of California - Los Angeles 1802**  
Problems of mass loss and mass transfer in close binary systems

Period	Obligations
05/01/78-10/31/84	FY83: \$14,100 TOTAL: \$92,999
Prin. Invest.	NASA Tech. Officer CASE Category
Playec, M. J.	GSFC/Kondo, Y. 11-Astronomy

**NSG 5351 University of California - Los Angeles 1803**  
Investigation of the wayside boundary region plasma and magnetic field

Period	Obligations
05/01/79-08/31/84	FY83: \$29,809 TOTAL: \$115,332
Prin. Invest.	NASA Tech. Officer CASE Category
Crooker, N.	GSFC/Wales, R. O. 32-Geological Sci
Siscoe, G. L.	

**NSG 5358 University of California - Los Angeles 1804**  
Ultraviolet observations of high excitation planetary nebulae

Period	Obligations
05/09/79-01/08/84	FY83: \$9,000 TOTAL: \$39,034
Prin. Invest.	NASA Tech. Officer CASE Category
Aller, L. H.	GSFC/Kondo, Y. 11-Astronomy

**NSG 7164 University of California - Los Angeles 1805**  
Dynamical studies of the Venus atmosphere

Period	Obligations
09/01/75-09/30/84	FY83: \$38,849 TOTAL: \$260,372
Prin. Invest.	NASA Tech. Officer CASE Category
Schubert, G.	HQ-EL/Brinton, H. C. 31-Atmos Sci
	HQ-EL/Brunk, W. E.

**NSG 7295 University of California - Los Angeles 1806**  
Analysis of data from the helium vector magnetometers on the Pioneers 10 and 11 spacecraft

Period	Obligations
10/01/76-10/31/83	FY83: \$74,000 TOTAL: \$680,542
Prin. Invest.	NASA Tech. Officer CASE Category
Kivelson, M. G.	HQ-EL/Brinton, H. C. 31-Atmos Sci
Walker, R. J.	HQ-EE/Schmerling, E. R.

**NSG 7315 University of California - Los Angeles 1807**  
Theoretical studies of Moon plasma interactions

Period	Obligations
02/01/77-01/31/84	FY83: \$32,081 TOTAL: \$233,144
Prin. Invest.	NASA Tech. Officer CASE Category
Schubert, G.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NSG 7341 University of California - Los Angeles 1808**  
Physics of astrophysical plasmas

Period	Obligations
04/01/77-01/30/83	FY83: \$40,307 TOTAL: \$245,744
Prin. Invest.	NASA Tech. Officer CASE Category
Kennel, C. F.	HQ-EL/Kaluzienski, L. J. 11-Astronomy
	HQ-EZ/Opp, A. G.

**NSG 7484 University of California - Los Angeles 1809**  
Planetary dynamos

Period	Obligations
08/01/78-01/31/84	FY83: \$21,025 TOTAL: \$76,357
Prin. Invest.	NASA Tech. Officer CASE Category
Busse, F. W.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NSG 7489 University of California - Los Angeles 1810**  
Paleobiologic studies of Archean evolution

Period	Obligations
06/01/79-11/30/81	FY83: TOTAL: \$175,476
Prin. Invest.	NASA Tech. Officer CASE Category
Schopf, J. W.	HQ-EZ/Schmerling, E. R. 32-Geological Sci

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**NAGW 309 University of California - Riverside 1811**  
Thermoregulation in primates in hyper-acceleration fields

Period	Obligations
03/15/82-04/14/84	FY83: \$47,451 TOTAL: \$90,007
Prin. Invest.	NASA Tech. Officer CASE Category
Fuller, C. A.	HQ-EB/Halstead, T. W. 51-Biological Sci

**NAS 2-10536 University of California - Riverside 1812**  
Thermoregulation in primates in the space environment

Period	Obligations
01/17/80-03/31/82	FY83: \$230,000 TOTAL: \$617,505
Prin. Invest.	NASA Tech. Officer CASE Category
Fuller, C. A.	ARC/Ferandin, J. 51-Biological Sci
	ARC/Connolly, J.

**NGR 05-008-022 University of California - Riverside 1813**  
Measurement of neutrons from Sun

Period	Obligations
05/16/69-12/31/83	FY83: \$207,692 TOTAL: \$1,145,742
Prin. Invest.	NASA Tech. Officer CASE Category
White, R. S.	HQ-EZ/Kaluzienski, L. J. 11-Astronomy
Zych, A. D.	HQ-EZ/Opp, A. G.

**NAG 1-77 University of California - San Diego 1814**  
Scientific and applications investigations of stratospheric trace gases

Period	Obligations
06/04/80-01/15/82	FY83: TOTAL: \$65,034
Prin. Invest.	NASA Tech. Officer CASE Category
Cicerone, R. J.	LARC/Sullivan, E. M. 31-Atmos Sci
Crutzen, P. J.	LARC/Russell, J. M.

**NAG 2-153 University of California - San Diego 1815**  
Pioneer 10 and 11 data analysis

Period	Obligations
01/01/82-12/31/83	FY83: \$100,000 TOTAL: \$175,000
Prin. Invest.	NASA Tech. Officer CASE Category
Fillius, W.	ARC/Fimmel, R. O. 19-Phys Sci, NEC

**NAG 2-249 University of California - San Diego 1816**  
High temperature absorption spectra

Period	Obligations
09/01/83-12/31/83	FY83: \$15,184 TOTAL: \$15,184
Prin. Invest.	NASA Tech. Officer CASE Category
Wilson, K. R.	ARC/Langhoff, S. R. 12-Chemistry
Reimers, J. R.	

**NAG 3-320 University of California - San Diego 1817**  
Spacecraft charging on ISEE

Period	Obligations
09/15/82-12/31/83	FY83: TOTAL: \$28,882
Prin. Invest.	NASA Tech. Officer CASE Category
Whipple, E. C.	LERC/Purvis, C. K. 13-Physics

**NAG 3-473 University of California - San Diego 1818**  
Combustion of particulate clouds at reduced gravitational conditions

Period	Obligations
01/02/84-01/01/85	FY83: \$93,993 TOTAL: \$93,993
Prin. Invest.	NASA Tech. Officer CASE Category
Berlad, A. L.	LERC/Sacksteder, K. 49-Engr, NEC

**NAG 5-11 University of California - San Diego 1819**  
Research relative to improvements in benchmark stability for precision tilt measurements of crustal dynamics

Period	Obligations
02/15/80-09/14/83	FY83: TOTAL: \$154,094
Prin. Invest.	NASA Tech. Officer CASE Category
Berger, J.	GSFC/Welker, J. 32-Geological Sci
Wyatt, F.	

**NAG 5-63 University of California - San Diego 1820**  
A study of extragalactic sources

Period	Obligations
06/01/80-03/14/84	FY83: \$6,168 TOTAL: \$23,301
Prin. Invest.	NASA Tech. Officer CASE Category
Worrall, D. M.	GSFC/Boggess, A. 11-Astronomy

**NAG 5-105 University of California - San Diego 1821**  
The nonlinear response in a baroclinic model to stationary forcings

Period	Obligations
09/15/80-03/31/83	FY83: TOTAL: \$126,500
Prin. Invest.	NASA Tech. Officer CASE Category
Roads, J. O.	GSFC/Shukla, J. 31-Atmos Sci

**NAG 5-194 University of California - San Diego 1822**  
Ultraviolet spectrophotometry of quasi-stellar objects and Seyfert galaxies

Period	Obligations
07/01/81-10/31/82	FY83: TOTAL: \$10,500
Prin. Invest.	NASA Tech. Officer CASE Category
Smith, H. E.	GSFC/Boggess, A. 11-Astronomy

**NAG 5-195 University of California - San Diego 1823**  
Ultraviolet spectrophotometry of selected quasars and galaxies

Period	Obligations
07/01/81-10/31/83	FY83: \$7,000 TOTAL: \$15,900
Prin. Invest.	NASA Tech. Officer CASE Category
Puetter, R. C.	GSFC/Kondo, Y. 11-Astronomy
Rudy, R. J.	

**NAG 5-229 University of California - San Diego 1824**  
Study of wave emissions stimulated by electron guns

Period	Obligations
04/01/82-03/31/83	FY83: TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer CASE Category
Tobert, R. B.	GSFC/Wales, R. O. 11-Astronomy

**NAG 5-236 University of California - San Diego 1825**  
Effects of global tropical weather satellite data on planetary waves

Period	Obligations
05/15/82-11/30/83	FY83: \$10,000 TOTAL: \$100,000
Prin. Invest.	NASA Tech. Officer CASE Category
Somerville, R. C.	GSFC/Baker, W. 31-Atmos Sci



**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAG 5-320 University of California - San Diego 1826**  
Development of a method for accurately tying sea surface positions to a deep sea floor reference point

Period	Obligations	
05/15/83-05/14/84	FY83: \$24,000	TOTAL: \$24,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Spiess, F. N.	GSFC/Welker, J. E.	32-Geological Sci

**NAG 5-364 University of California - San Diego 1827**  
Hydrogen line ratios in the narrow line regions of active galaxies

Period	Obligations	
09/01/83-08/31/84	FY83: \$6,700	TOTAL: \$6,700
Prin. Invest.	NASA Tech. Officer	CASE Category
Coehen, R. D.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-610 University of California - San Diego 1828**  
USCD participation in active plasma release experiments

Period	Obligations	
06/30/82-09/30/83	FY83:	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Torbert, R. B.	GSFC/Early, L. J.	13-Physics
	GSFC/Pless, R. H.	

**NAG 8-340 University of California - San Diego 1829**  
X-ray observations of optical absorption-line quasi-stellar objects on the High Energy Astronomical Observatory-B guest investigator program

Period	Obligations	
03/01/80-02/28/82	FY83:	TOTAL: \$6,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Burbidge, E. M.	MSFC/Jones, J. B.	11-Astronomy

**NAG 8-377 University of California - San Diego 1830**  
IPC observations of 31 selected quasars for determination of their average 0.15-5000 keV spectrum 1

Period	Obligations	
09/22/80-12/31/83	FY83:	TOTAL: \$6,542
Prin. Invest.	NASA Tech. Officer	CASE Category
Worrall, D. M.	MSFC/Stone, J. F.	11-Astronomy

**NAG 9-33 University of California - San Diego 1831**

Historical studies on extraterrestrial materials

Period	Obligations	
02/01/83-01/31/84	FY83: \$125,000	TOTAL: \$125,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Arnold, J. R.	JSC/Dietrich, J. W.	12-Chemistry

**NAG 9-41 University of California - San Diego 1832**

Fragmentary solar system history

Period	Obligations	
02/01/83-01/31/84	FY83: \$115,000	TOTAL: \$115,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Marti, K.	JSC/Dietrich, J. W.	12-Chemistry

**NAG 9-49 University of California - San Diego 1833**  
Isotopic, chemical and mineralogical investigations of extraterrestrial materials

Period	Obligations	
02/01/83-01/31/84	FY83: \$215,000	TOTAL: \$215,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Lugmair, G. W.	JSC/Dietrich, J. W.	32-Geological Sci

**NAGW 12 University of California - San Diego 1834**

Theoretical work in high energy astrophysics and extragalactic astronomy

Period	Obligations	
11/01/79-10/31/83	FY83:	TOTAL: \$33,347
Prin. Invest.	NASA Tech. Officer	CASE Category
Felten, J. E.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy

**NAGW 20 University of California - San Diego 1835**

Mechanism of synthesis of amino, hydroly and dicarboxylic acids in carbonaceous chondrites

Period	Obligations	
12/01/79-12/31/83	FY83: \$61,886	TOTAL: \$195,622
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, S. L.	HQ-EB/Devincenzi, D. L.	
	HQ-EB/Rambler, M.	32-Geological Sci

**NAGW 30 University of California - San Diego 1836**

Radioactive transfer effects in quasi-stellar emission line clouds

Period	Obligations	
02/01/80-02/28/84	FY83: \$30,000	TOTAL: \$133,508
Prin. Invest.	NASA Tech. Officer	CASE Category
Canfield, R. C.	HQ-EZ/Stencel, R. E.	11-Astronomy
Puetter, R. C.	HQ-EZ/Weiler, E. J.	

**NAGW 73 University of California - San Diego 1837**

Planetary biology and microbial ecology

Period	Obligations	
04/05/80-07/01/82	FY83:	TOTAL: \$67,675
Prin. Invest.	NASA Tech. Officer	CASE Category
Nealson, K. H.	HQ-EB/Devincenzi, D. L.	
Cowans, J.		51-Biological Sci

**NAGW 103 University of California - San Diego 1838**

The abundance of the elements

Period	Obligations	
11/01/80-10/30/83	FY83: \$8,000	TOTAL: \$34,458
Prin. Invest.	NASA Tech. Officer	CASE Category
Suess, H.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

**NAGW 181 University of California - San Diego 1839**

Research expedition to study prochloran in Palau

Period	Obligations	
03/15/81-10/14/83	FY83: \$18,498	TOTAL: \$51,106
Prin. Invest.	NASA Tech. Officer	CASE Category
Lewin, R. A.	HQ-EB/Devincenzi, D. L.	
		51-Biological Sci

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**NAGW 210 University of California - San Diego 1840**  
Condensation process in the early solar system  
*Period* *Obligations*  
05/15/81-05/14/84 FY83: \$32,130 TOTAL: \$91,269  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Arnold, J. R. HQ-EL/Williams, R. J. 32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 225 University of California - San Diego 1841**  
Impact ionization study  
*Period* *Obligations*  
08/01/81-11/30/83 FY83: TOTAL: \$9,632  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Whipple, E. C. HQ-EL/Murphy, R. E. 31-Atmos Sci

**NAGW 336 University of California - San Diego 1842**  
Trapped particle absorption by the ring of Jupiter  
*Period* *Obligations*  
04/15/82-04/14/84 FY83: \$40,000 TOTAL: \$80,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fillius, W. HQ-EE/Lynch, J. T. 13-Physics  
HQ-EL/Evans, N.

**NAGW 342 University of California - San Diego 1843**  
Thiol biochemistry of prokaryotes  
*Period* *Obligations*  
06/08/82-06/07/84 FY83: \$65,000 TOTAL: \$160,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fahey, R. C. HQ-EB/Devincenzi, D. L.  
HQ-EB/Rambler, M. 51-Biological Sci

**NAGW 399 University of California - San Diego 1844**  
The physics and chemistry of dusty plasmas; A laboratory and theoretical investigation  
*Period* *Obligations*  
01/01/83-12/31/83 FY83: \$200,000 TOTAL: \$200,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Whipple, E. C., Jr. HQ-E/Rosendhal, J. D. 11-Astronomy  
HQ-EP/Schrom, J.

**NAGW 449 University of California - San Diego 1845**  
High resolution gamma-ray spectroscopy of cosmic sources  
*Period* *Obligations*  
04/15/83-04/14/84 FY83: \$624,993 TOTAL: \$624,993  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Matteson, J. L. HQ-EZ/Opp, A. G. 11-Astronomy  
HQ-EZ/Kaluzienski, L. J.

**NAGW 458 University of California - San Diego 1846**  
Assessing ocean productivity from satellite measurements  
*Period* *Obligations*  
03/01/83-02/28/84 FY83: \$69,200 TOTAL: \$69,200  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eppley, R. W. HQ-EE/Esaias, W. E. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAS 2-6552 University of California - San Diego 1847**  
Data analysis of Jovian trapped radiation by Pioneer F/G  
*Period* *Obligations*  
01/25/72-12/31/81 FY83: TOTAL: \$1,193,468  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fillius, R. W. ARC/Fimmel, R. O. 11-Astronomy  
ARC/Dyer, J. W.

**NAS 5-24463 University of California - San Diego 1848**  
Faint object spectrograph for space telescope  
*Period* *Obligations*  
09/15/78-10/31/84 FY83: \$5,540,500 TOTAL: \$31,070,533  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harms, R. A. GSFC/White, R. A. 11-Astronomy  
GSFC/Sours, W. P.

**NAS 5-25054 University of California - San Diego 1849**  
Development of digital image tubes  
*Period* *Obligations*  
05/01/78-11/30/83 FY83: \$36,883 TOTAL: \$554,012  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Beaver, E. A. GSFC/Shannon, J. L. 11-Astronomy

**NAS 5-26249 University of California - San Diego 1850**  
Coastal zone scanner validation studies  
*Period* *Obligations*  
07/23/80-09/30/83 FY83: TOTAL: \$221,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Austin, R. W. GSFC/Szajna, E. F. 33-Oceanography

**NAS 5-26668 University of California - San Diego 1851**  
The calculation of the rate of neutron production in solar flares by accelerated particles  
*Period* *Obligations*  
09/01/81-10/01/82 FY83: TOTAL: \$20,208  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lingenfelter, R. E. GSFC/Ramaty, R. 13-Physics

**NAS 5-26854 University of California - San Diego 1852**  
Electric field investigation by electron drift studies (EFIELDS)  
*Period* *Obligations*  
06/15/82-09/15/84 FY83: \$143,492 TOTAL: \$193,492  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McIlwain, C. E. GSFC/O'Brien, J. J. 13-Physics

**NAS 5-27228 University of California - San Diego 1853**  
A statistical understanding of tectonic motions analysis of crustal dynamics observations  
*Period* *Obligations*  
06/29/82-07/01/84 FY83: \$61,565 TOTAL: \$112,565  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Agnew, D. C. GSFC/Mead, G. D. 32-Geological Sci  
Berger, J.  
Wyatt, F.

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**NAS 5-27234 University of California - San Diego 1854**  
Plate motion's and deformation from geologic and geodetic data

Period	Obligations	
05/27/82-05/27/84	FY83: \$55,000	TOTAL: \$97,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Jordan, T. H.	GSFC/Mead, G. D.	32-Geological Sci

**NAS 5-27248 University of California - San Diego 1855**  
Gamma ray observatory instrument design review support

Period	Obligations	
06/16/82-09/30/84	FY83: \$15,000	TOTAL: \$31,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Whipple, E. C.	GSFC/Davis, M. A.	49-Engr, NEC

**NAS 5-27315 University of California - San Diego 1856**  
Conduct and design a feasibility study for a microprocessor in the hydro-experiment

Period	Obligations	
07/06/82-04/30/84	FY83: \$43,143	TOTAL: \$96,237
Prin. Invest.	NASA Tech. Officer	CASE Category
Fillins, R. W.	GSFC/Scudder, J. D.	19-Phys Sci, NEC
	GSFC/Ogilvie, K. W.	

**NAS 5-27602 University of California - San Diego 1857**  
X-ray timing Explorer experiment study experiment

Period	Obligations	
06/01/83-11/30/83	FY83: \$50,000	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Rothschild, R. E.	GSFC/Hibbard, W. B.	42-Astro Engr
Pelling, R. M.		

**NAS 8-27974 University of California - San Diego 1858**  
Design and development of AGR-4 MeV range gamma ray telescope experiment under the HEAO program

Period	Obligations	
06/22/72-09/30/84	FY83: \$102,071	TOTAL: \$8,825,438
Prin. Invest.	NASA Tech. Officer	CASE Category
Peterson, L. E.	MSFC/Stone, J. F.	11-Astronomy
	MSFC/Lusk, J. L.	

**NAS 8-32984 University of California - San Diego 1859**  
Analysis of soft X-ray data

Period	Obligations	
02/01/79-02/28/82	FY83:	TOTAL: \$41,083
Prin. Invest.	NASA Tech. Officer	CASE Category
Svestka, Z.	MSFC/Deloach, A. C.	13-Physics
	MSFC/Snoddy, W. C.	

**NAS 8-33795 University of California - San Diego 1860**  
Solar terrestrial observatory science study group

Period	Obligations	
06/23/80-06/23/82	FY83:	TOTAL: \$34,939
Prin. Invest.	NASA Tech. Officer	CASE Category
Canfield, R. C.	MSFC/Chappell, C. R.	31-Atmos Sci
	MSFC/Fields, S. A.	

**NAS 8-35012 University of California - San Diego 1861**  
Design and specifications of components in the Batse experiment on gamma ray observatory

Period	Obligations	
11/15/82-06/14/84	FY83: \$91,722	TOTAL: \$91,722
Prin. Invest.	NASA Tech. Officer	CASE Category
Whipple, E. C.	MSFC/Parnell, T. A.	31-Atmos Sci
	MSFC/Fishman, G. J.	

**NAS 8-35037 University of California - San Diego 1862**  
Study of utilization of external tanks of the space transportation system in space

Period	Obligations	
08/16/82-08/16/83	FY83: \$29,762	TOTAL: \$69,762
Prin. Invest.	NASA Tech. Officer	CASE Category
Arnold, J. R.	MSFC/Wales, W. W.	41-Aero Engr

**NAS 9-16037 University of California - San Diego 1863**  
Pulmonary functions during weightlessness

Period	Obligations	
01/17/80-10/31/86	FY83: \$835,965	TOTAL: \$1,056,191
Prin. Invest.	NASA Tech. Officer	CASE Category
West, J. B.	JSC/McAllum, W. E.	59-Life Sci, NEC

**NAS 9-16312 University of California - San Diego 1864**  
Micro assay for catecholamine concentration in body fluids

Period	Obligations	
02/01/81-02/01/83	FY83:	TOTAL: \$18,599
Prin. Invest.	NASA Tech. Officer	CASE Category
Ziegler, M. G.	JSC/Leach, C. S.	59-Life Sci, NEC

**NASW 3643 University of California - San Diego 1865**  
Research into selected key factors of space industrialization and lunar utilization

Period	Obligations	
09/27/82-09/30/84	FY83:	TOTAL: \$90,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Arnold, J. R.	HQ-EN/Gordon, P. G.	49-Engr, NEC
	HQ-EN/Testardi, L. R.	

**NASW 3667 University of California - San Diego 1866**  
Development of a charged-coupled-device digicon for space astronomy

Period	Obligations	
10/01/82-09/30/83	FY83: \$154,902	TOTAL: \$154,902
Prin. Invest.	NASA Tech. Officer	CASE Category
Hier, R. G.	HQ-EZ/Weiler, E. J.	11-Astronomy
	HQ-EZ/Boggess, N. W.	

**NASW 3669 University of California - San Diego 1867**  
Development of a self contained acoustic Doppler velocity profiler

Period	Obligations	
02/01/83-01/31/84	FY83: \$250,230	TOTAL: \$250,230
Prin. Invest.	NASA Tech. Officer	CASE Category
Davis, R. E.	HQ-EE/McGoldrick, L. F.	
	HQ-EE/Wilson, W. S.	33-Oceanography

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**NASW 3702 University of California - San Diego 1868**  
Development of optimized detector/ spectrophotometer technology for low background space astronomy missions

Period	Obligations
12/01/82-11/30/83	FY83: \$149,585 TOTAL: \$149,585
Prin. Invest.	NASA Tech. Officer CASE Category
Jones, B.	HQ-EZ/Bogges, N. W. 11-Astronomy
	HQ-EZ/Weiler, E. J.

**NGL 05-005-003 University of California - San Diego 1869**  
Laboratory and balloon experiments in X-ray and gamma ray astronomy

Period	Obligations
09/15/62-11/30/83	FY83: \$477,337 TOTAL: \$3,746,482
Prin. Invest.	NASA Tech. Officer CASE Category
Peterson, L. E.	HQ-EZ/Kaluzienski, L. J. 13-Physics
Pelling, R. M.	HQ-EZ/Opp, A. G.

**NGL 05-005-004 University of California - San Diego 1870**  
Theoretical studies in astrophysics

Period	Obligations
02/04/63-03/31/84	FY83: \$36,264 TOTAL: \$958,937
Prin. Invest.	NASA Tech. Officer CASE Category
Gould, R. J.	HQ-EZ/Kaluzienski, L. J. 11-Astronomy
	HQ-EZ/Opp, A. G.

**NGL 05-005-007 University of California - San Diego 1871**  
Study of geomagnetically trapped particles by Explorer and Injun satellite data, refining particle detectors, detector systems and telemetered data processing equipment

Period	Obligations
02/20/64-09/30/83	FY83: \$235,000 TOTAL: \$3,226,364
Prin. Invest.	NASA Tech. Officer CASE Category
McIlwain, C. E.	HQ-EE/Lynch, J. T. 13-Physics
	HQ-EZ/Schmerling, E. R.

**NGL 05-009-002 University of California - San Diego 1872**  
Studies of the composition and structure of meteorites

Period	Obligations
10/02/63-06/30/82	FY83: TOTAL: \$839,112
Prin. Invest.	NASA Tech. Officer CASE Category
Arrhenius, G.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NGL 05-009-148 University of California - San Diego 1873**  
Lunar sample analysis

Period	Obligations
02/11/71-05/31/83	FY83: TOTAL: \$1,277,984
Prin. Invest.	NASA Tech. Officer CASE Category
Arnold, J. R.	JSC/Dietrich, J. W. 12-Chemistry

**NGL 05-009-150 University of California - San Diego 1874**  
Lunar sample analysis

Period	Obligations
02/01/71-01/31/84	FY83: TOTAL: \$2,067,622
Prin. Invest.	NASA Tech. Officer CASE Category
Marti, K.	JSC/Dietrich, J. W. 12-Chemistry

**NGR 05-005-005 University of California - San Diego 1875**  
Study of lunar gamma ray emission

Period	Obligations
09/10/63-01/31/84	FY83: \$83,315 TOTAL: \$1,060,151
Prin. Invest.	NASA Tech. Officer CASE Category
Arnold, J. R.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NGR 05-005-055 University of California - San Diego 1876**  
Infrared astronomical observation from high altitude airplane/ telescope program

Period	Obligations
06/05/73-04/30/83	FY83: TOTAL: \$574,603
Prin. Invest.	NASA Tech. Officer CASE Category
Jones, B.	ARC/Haughney, L. C. 11-Astronomy

**NGR 05-009-110 University of California - San Diego 1877**  
The structure and evolution of the asteroid belt

Period	Obligations
01/23/70-11/30/83	FY83: \$55,000 TOTAL: \$713,690
Prin. Invest.	NASA Tech. Officer CASE Category
Alfven, H.	HQ-EL/Brinton, H. C. 11-Astronomy
	HQ-EL/Brunk, W. E.

**NGR 05-009-188 University of California - San Diego 1878**  
Construction of a 200 channel photometer for use in low light level astronomy

Period	Obligations
05/17/72-12/31/83	FY83: TOTAL: \$618,743
Prin. Invest.	NASA Tech. Officer CASE Category
McIlwain, C. E.	HQ-EZ/Weiler, E. J. 11-Astronomy

**NSG 1641 University of California - San Diego 1879**  
Ship and satellite bio-optical research in the California bight

Period	Obligations
08/01/79-01/31/82	FY83: TOTAL: \$308,532
Prin. Invest.	NASA Tech. Officer CASE Category
Smith, R. C.	LARC/Esaias, W. E. 33-Oceanography

**NSG 7027 University of California - San Diego 1880**  
Orbital geochemical data analysis and synthesis

Period	Obligations
03/01/74-01/31/84	FY83: \$20,000 TOTAL: \$489,568
Prin. Invest.	NASA Tech. Officer CASE Category
Arnold, J. R.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NSG 7102 University of California - San Diego 1881**  
Research on processes controlling the formation and evolution of the small bodies in the solar

Period	Obligations
09/01/74-11/30/83	FY83: \$55,000 TOTAL: \$451,214
Prin. Invest.	NASA Tech. Officer CASE Category
Alfven, H.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

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**NSG 7121 University of California - San Diego 1882**  
Carbonaceous chondrites early irradiation and 244/PU fission records

Period	Obligations
02/27/75-01/31/84	FY83: TOTAL: \$398,421
Prin. Invest.	NASA Tech. Officer CASE Category
MacDougall, J. D.	HQ-EL/Taylor, L. A. 32-Geological Sci
	HQ-EL/Quaide, W. L.

**NSG 7161 University of California - San Diego 1883**  
Analysis and interpretation of solar X-ray data from OSO-7

Period	Obligations
07/01/75-11/30/82	FY83: \$80,000 TOTAL: \$514,453
Prin. Invest.	NASA Tech. Officer CASE Category
Hudson, H. S.	HQ-EZ/Chipman, E. G. 13-Physics

**NSG 7294 University of California - San Diego 1884**  
Preparation of a set of sky maps in hard X-rays from OSO-1 data

Period	Obligations
10/01/76-02/28/82	FY83: TOTAL: \$84,000
Prin. Invest.	NASA Tech. Officer CASE Category
Rothschild, R. E.	HQ-EZ/Kaluzienski, L. J. 11-Astronomy

**NSG 7377 University of California - San Diego 1885**  
Ultraviolet spectra of quasars related extra galactic sources, and X-ray sources

Period	Obligations
09/15/77-10/14/84	FY83: TOTAL: \$195,388
Prin. Invest.	NASA Tech. Officer CASE Category
Burbidge, E. M.	HQ-EZ/Stencel, R. E. 11-Astronomy
	HQ-EZ/Weiler, E. J.

**NSG 7406 University of California - San Diego 1886**  
Hydrodynamic models of flares

Period	Obligations
03/01/78-02/28/84	FY83: \$112,000 TOTAL: \$489,593
Prin. Invest.	NASA Tech. Officer CASE Category
Canfield, R. C.	HQ-EZ/Chipman, E. G. 13-Physics

**NSG 7541 University of California - San Diego 1887**  
Theoretical studies in gamma ray line astronomy

Period	Obligations
02/01/80-04/30/84	FY83: \$54,950 TOTAL: \$223,945
Prin. Invest.	NASA Tech. Officer CASE Category
Lingenfelter, R. E.	HQ-EZ/Kaluzienski, L. J. 11-Astronomy
	HQ-EZ/Opp, A. G.

**NSG 7623 University of California - San Diego 1888**  
The new plasmas and its applications to planetary magnetospheres and the heliosphere

Period	Obligations
07/01/79-06/30/83	FY83: TOTAL: \$200,000
Prin. Invest.	NASA Tech. Officer CASE Category
Alfven, H.	HQ-EE/Lynch, J. T. 19-Phys Sci, NEC
	HQ-EE/Schmerling, E. R.

**NAGW 236 University of California - San Francisco 1889**  
Alterations in gut transport of minerals and in binding protein during simulated weightlessness

Period	Obligations
08/01/81-11/30/83	FY83: TOTAL: \$123,000
Prin. Invest.	NASA Tech. Officer CASE Category
Bikle, D. D.	HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 307 University of California - San Francisco 1890**  
Exobiology: Extension of work on organic geochemistry chemical evolution and evolution of living systems

Period	Obligations
01/01/82-12/31/83	FY83: \$125,000 TOTAL: \$250,000
Prin. Invest.	NASA Tech. Officer CASE Category
Calvin, M.	HQ-EB/Geib, D. S. 32-Geological Sci
	Burlingame, A. L.

**NAGW 349 University of California - San Francisco 1891**  
Changes in bone structure and metabolism during simulated weightlessness endocrine and dietary factors

Period	Obligations
07/01/82-10/31/84	FY83: \$43,000 TOTAL: \$92,328
Prin. Invest.	NASA Tech. Officer CASE Category
Halloran, B.	HQ-EB/Halstead, T. W. 51-Biological Sci

**NAS 2-10927 University of California - San Francisco 1892**  
Calcium metabolism and correlated endocrine measurements in primates during Cosmos '82

Period	Obligations
03/01/81-10/31/84	FY83: \$23,735 TOTAL: \$79,147
Prin. Invest.	NASA Tech. Officer CASE Category
Cann, C.	ARC/Souza, K. 59-Life Sci, NEC
	ARC/Holton, E.

**NAS 9-15887 University of California - San Francisco 1893**  
Computerized tomographic determination of spinal bone mineral content

Period	Obligations
09/15/79-09/14/82	FY83: TOTAL: \$152,800
Prin. Invest.	NASA Tech. Officer CASE Category
Genant, H. K.	JSC/Altchuler, S. I. 56-Medical Sciences

**NAS 9-16038 University of California - San Francisco 1894**  
Life science flight experiment insulin and glucose metabolism in man

Period	Obligations
01/17/80-01/31/82	FY83: TOTAL: \$13,673
Prin. Invest.	NASA Tech. Officer CASE Category
Searle, D. L.	JSC/White, T. T. 59-Life Sci, NEC

**NAS 9-16227 University of California - San Francisco 1895**  
Pathophysiology of mineral loss during increased urinary and fecal calcium excretion

Period	Obligations
03/01/80-10/31/86	FY83: \$150,000 TOTAL: \$207,697
Prin. Invest.	NASA Tech. Officer CASE Category
Arnaud, C. D.	JSC/Newkirk, K. E. 59-Life Sci, NEC

**NASA'S UNIVERSITY PROGRAM  
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**NCA 2-665003 University of California - San Francisco 1896**  
Studies on the localization and interconnections of emetic trigger zones in the central nervous system

Period	FY83:	Obligations
01/01/80-12/31/82		TOTAL: \$48,750
Prin. Invest.	NASA Tech. Officer	CASE Category
Snyder, R. L.	ARC/Mehler, W. R.	51-Biological Sci

**NCA 2-665006 University of California - San Francisco 1897**  
Interactions between osmolality and blood volume in the control of vasopressin secretion

Period	FY83:	Obligations
06/01/80-05/31/82		TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ramsay, D. J.	ARC/Keil, L. C.	51-Biological Sci

**NCA 2-665007 University of California - San Francisco 1898**  
Exploratory studies of the cardiovascular parameters of motion sickness

Period	FY83:	Obligations
07/01/80-12/31/81		TOTAL: \$18,787
Prin. Invest.	NASA Tech. Officer	CASE Category
Naifeh, K.	ARC/Cowings, P. S.	69-Psych, NEC

**NCA 2-665008 University of California - San Francisco 1899**  
Calcium kinetics during hypokinesia

Period	FY83:	Obligations
07/15/80-01/14/83		TOTAL: \$52,972
Prin. Invest.	NASA Tech. Officer	CASE Category
Cann, C. E.	ARC/Holton, E. M.	51-Biological Sci

**NCA 2-665102 University of California - San Francisco 1900**  
Comparison of the effects of insulin-like growth factor, neurotrophic factor, and somatotropin on muscle growth

Period	FY83:	Obligations
02/01/81-01/31/83		TOTAL: \$58,934
Prin. Invest.	NASA Tech. Officer	CASE Category
Rosen, S. D.	ARC/Ellis, S.	51-Biological Sci

**NCA 2-665103 University of California - San Francisco 1901**  
Role of central catecholaminergic neurons in the control of vasopressin secretion

Period	FY83:	Obligations
07/01/81-06/30/82		TOTAL: \$6,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Reid, I. A.	ARC/Keil, L. C.	51-Biological Sci

**NCA 2-665201 University of California - San Francisco 1902**  
Regulation of adrenal function during volume expansion

Period	FY83:	Obligations
01/01/82-12/31/83	\$12,500	TOTAL: \$42,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Dallman, M. F.	ARC/V-danellis, J.	51-Biological Sci
	ARC/Keil, L. C.	

**NCA 2-665202 University of California - San Francisco 1903**  
The physiological role of osteocalcin in homeostatic control of bone

Period	FY83:	Obligations
01/01/82-12/31/83	\$11,000	TOTAL: \$40,902
Prin. Invest.	NASA Tech. Officer	CASE Category
Cann, C.	ARC/Callahan, P. X.	51-Biological Sci

**NCA 2-665203 University of California - San Francisco 1904**  
Hormonal responses to headdown bedrest

Period	FY83:	Obligations
07/01/82-06/30/84	\$5,000	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Reid, I. A.	ARC/Keil, L. C.	51-Biological Sci

**NCA 2-665301 University of California - San Francisco 1905**  
Immunocytochemical localization of neuropeptides in the chemo-receptive vomiting trigger zone

Period	FY83:	Obligations
01/01/83-06/30/84	\$14,400	TOTAL: \$20,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Basbaum, A. I.	ARC/Mehler, W. R.	56-Medical Sciences

**NCA 2-665902 University of California - San Francisco 1906**  
Bone turnover and endocrine status in rats on a model system that simulates weightlessness

Period	FY83:	Obligations
04/15/79-01/01/82		TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Arnaud, C. D.	ARC/Holton, E. M.	51-Biological Sci

**NCA 2-665903 University of California - San Francisco 1907**  
Localization of tripeptidyl aminopeptidase and carbonic anhydrase III in rat muscles by light and electron microscopy

Period	FY83:	Obligations
06/01/79-12/31/81		TOTAL: \$48,285
Prin. Invest.	NASA Tech. Officer	CASE Category
Rosen, S. D.	ARC/Ellis, S.	51-Biological Sci

**NCA 2-665905 University of California - San Francisco 1908**  
Quantitative determination of diastolic left ventricular properties and dynamic geometry in the dog

Period	FY83:	Obligations
07/01/79-06/30/84		TOTAL: \$20,968
Prin. Invest.	NASA Tech. Officer	CASE Category
Glantz, S. A.	ARC/Sandler, H.	56-Medical Sciences

**NCA 2-665906 University of California - San Francisco 1909**  
Ultrastructural studies of ionic transfer through bone cell sheets in isolated perfusion culture

Period	FY83:	Obligations
07/01/79-09/30/81		TOTAL: \$40,882
Prin. Invest.	NASA Tech. Officer	CASE Category
Arnaud, C. D.	ARC/Philpott, D. E.	56-Medical Sciences

**NCC 2-115 University of California - San Francisco 1910**  
A preventive method for the zero-gravity sickness syndrome

Period	FY83:	Obligations
01/01/81-11/30/83	\$204,026	TOTAL: \$420,296
Prin. Invest.	NASA Tech. Officer	CASE Category
Kamiya, J.	ARC/Cowings, P. S.	61-Biol Aspects

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**NCC 2-162 University of California - San Francisco 1911**  
Ultrastructural and biochemical studies of transport by cultured osteosarcoma cells in vitro

Period	Obligations
10/01/81-10/31/83	FY83: TOTAL: \$47,906
Prin. Invest.	NASA Tech. Officer CASE Category
Strewler, G. J.	ARC/Philpott, D. E. 56-Medical Sciences
Arnaud, C. D.	

**NCC 2-178 University of California - San Francisco 1912**  
Bone, calcium, and space flight

Period	Obligations
03/01/82-04/30/84	FY83: \$7,000 TOTAL: \$19,987
Prin. Invest.	NASA Tech. Officer CASE Category
Cann, C. E.	ARC/Holton, E. M. 56-Medical Sciences

**NCC 2-181 University of California - San Francisco 1913**  
Skeletal alterations in adult rats during simulated weightlessness

Period	Obligations
03/01/82-02/28/83	FY83: TOTAL: \$22,683
Prin. Invest.	NASA Tech. Officer CASE Category
Arnaud, C. D.	ARC/Holton, E. M. 51-Biological Sci
Wronski, T. J.	

**NCC 2-194 University of California - San Francisco 1914**  
The role of low and high pressure baroreceptors in the control of fluid balance

Period	Obligations
06/01/82-05/31/84	FY83: \$18,000 TOTAL: \$35,976
Prin. Invest.	NASA Tech. Officer CASE Category
Ramsay, D. J.	ARC/Keil, L. C. 59-Life Sci, NEC

**NCC 2-225 University of California - San Francisco 1915**  
Endocrine alterations in adult rats subjected to simulated weightlessness

Period	Obligations
10/01/82-09/30/83	FY83: \$6,159 TOTAL: \$6,159
Prin. Invest.	NASA Tech. Officer CASE Category
Halloran, B. F.	ARC/Holton, E. M. 51-Biological Sci

**NSG 7151 University of California - San Francisco 1916**  
Light energy conversion in halobacterium

Period	Obligations
07/01/75-09/30/83	FY83: \$55,848 TOTAL: \$429,375
Prin. Invest.	NASA Tech. Officer CASE Category
Stoeckenius, W.	HQ-EB/Devincenzi, D. L.
Bogomolni, R. A.	51-Biological Sci

**NAG 2-48 University of California - Santa Barbara 1917**  
Thermodynamics of free electron lasers

Period	Obligations
05/01/80-06/30/83	FY83: TOTAL: \$48,882
Prin. Invest.	NASA Tech. Officer CASE Category
Colson, W. B.	ARC/McKenzie, R. L. 13-Physics

**NAG 2-73 University of California - Santa Barbara 1918**  
Exploration of evolutionary histories leading to complex life

Period	Obligations
10/01/80-06/30/83	FY83: TOTAL: \$29,762
Prin. Invest.	NASA Tech. Officer CASE Category
Valentine, J. W.	ARC/Billingham, J. 51-Biological Sci

**NAG 2-121 University of California - Santa Barbara 1919**  
Agricultural land use change detection, California

Period	Obligations
07/01/81-02/28/82	FY83: TOTAL: \$28,000
Prin. Invest.	NASA Tech. Officer CASE Category
Estes, J. E.	ARC/Sinnott, D. B. 99-Multi-Discip

**NAG 5-177 University of California - Santa Barbara 1920**  
Neotectonics of the San Andres Fault system-basin and range province juncture

Period	Obligations
05/01/81-11/30/83	FY83: TOTAL: \$56,000
Prin. Invest.	NASA Tech. Officer CASE Category
Estes, J. E.	GSFC/Lowman, P. D., Jr.
Crowell, J. C.	32-Geological Sci

**NAG 5-328 University of California - Santa Barbara 1921**  
Research relative to angular distribution of snow reflectance

Period	Obligations
07/01/83-09/30/84	FY83: \$10,000 TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer CASE Category
Dozier, J.	GSFC/Chang, A. T. 32-Geological Sci

**NAG 5-369 University of California - Santa Barbara 1922**  
Advanced data structures for integration of image and cartographic data

Period	Obligations
09/01/83-02/29/84	FY83: \$15,000 TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer CASE Category
Peuquet, D. J.	GSFC/Goldberg, M. J.
	GSFC/Berbert, J. 22-Computer Science

**NAG 6-14 University of California - Santa Barbara 1923**  
Photoecology, optical properties and remote sensing of warm core rings

Period	Obligations
04/01/81-03/31/83	FY83: \$26,999 TOTAL: \$169,499
Prin. Invest.	NASA Tech. Officer CASE Category
Smith, R. C.	GSFC/Hoge, F. E. 33-Oceanography

**NAG 9-64 University of California - Santa Barbara 1924**  
Habitation of the earth: Assessing key vegetation

Period	Obligations
02/01/83-07/31/84	FY83: \$103,000 TOTAL: \$103,000
Prin. Invest.	NASA Tech. Officer CASE Category
Botkin, D. B.	JSC/Browne, I. D. 39-Env Sci, NEC

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**NAGW 231 University of California - Santa Barbara 1925**  
Issues in global ecology

Period	Obligations	
07/01/81-08/31/82	FY83:	TOTAL: \$56,766
Prin. Invest.	NASA Tech. Officer	CASE Category
Botkin, D. B.	HQ-EL/Hogg, H.	54-Env Biology

**NAGW 290 University of California - Santa Barbara 1926**  
Ship and satellite bio-optical research in the California blight

Period	Obligations	
02/01/82-10/31/83	FY83: \$200,000	TOTAL: \$300,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, R. C.	HQ-EE/Esaias, W. E.	33-Oceanography
Baker, K. S.	HQ-EE/Wilson, W. S.	

**NAGW 323 University of California - Santa Barbara 1927**  
Global vegetation inventory and monitoring using remote sensing technology

Period	Obligations	
05/01/82-10/31/83	FY83: \$122,938	TOTAL: \$221,943
Prin. Invest.	NASA Tech. Officer	CASE Category
Strahler, A. H.	HQ-EB/Rambler, M.	39-Env Sci, NEC
Bodkin, D. B.	HQ-EB/Devincenzi, D. L.	
Estes, J. E.		

**NAGW 391 University of California - Santa Barbara 1928**  
Improved materials preparation and the role of convection on crystal growth and polymerization in the area of one-dimensional conductors and conducting polymers

Period	Obligations	
12/01/82-11/30/84	FY83: \$74,076	TOTAL: \$74,076
Prin. Invest.	NASA Tech. Officer	CASE Category
Heeger, A. J.	HQ-EN/Gordon, P. G.	13-Physics

**NAGW 455 University of California - Santa Barbara 1929**  
NASA remote sensing information sciences research group

Period	Obligations	
05/01/83-04/30/86	FY83: \$212,000	TOTAL: \$212,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Estes, J. E.	HQ-EL/Tuyahov, A. J.	39-Env Sci, NEC

**NAS 5-27463 University of California - Santa Barbara 1930**  
LANDSAT-D investigations in snow hydrology

Period	Obligations	
11/17/82-03/16/85	FY83: \$125,000	TOTAL: \$125,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Dozier, J.	GSFC/Oseroff, H.	39-Env Sci, NEC
	GSFC/Stuart, L. M.	

**NAS 5-27497 University of California - Santa Barbara 1931**  
Remote sensing of urban/suburban phenomena

Period	Obligations	
11/02/82-12/02/83	FY83: \$29,970	TOTAL: \$29,970
Prin. Invest.	NASA Tech. Officer	CASE Category
Estes, J.	GSFC/Toll, D. L.	19-Phys Sci, NEC

**NAS 9-15509 University of California - Santa Barbara 1932**  
Forest classification and inventory system using LANDSAT, digital terrain, and ground sample data

Period	Obligations	
04/01/78-11/30/81	FY83:	TOTAL: \$148,867
Prin. Invest.	NASA Tech. Officer	CASE Category
Strahler, A. H.	JSC/Amsbury, D. L.	32-Geological Sci

**NCA 2-680101 University of California - Santa Barbara 1933**  
Ecological interactions among organisms in physically isolated environments: Identification of possible exogenous control parameters

Period	Obligations	
06/01/81-05/31/83	FY83:	TOTAL: \$26,546
Prin. Invest.	NASA Tech. Officer	CASE Category
Botkin, D.	ARC/MacElroy, R. D.	54-Env Biology

**NCC 2-63 University of California - Santa Barbara 1934**  
An investigation of the effect of surface impurities on the absorption kinetics of hydrogen chemisorbed iron

Period	Obligations	
04/01/80-03/31/84	FY83: \$81,377	TOTAL: \$255,824
Prin. Invest.	NASA Tech. Officer	CASE Category
Shanabarger, M. R.	ARC/Nelson, H. G.	47-Materials Engr

**NCC 2-124 University of California - Santa Barbara 1935**  
LANDSAT inventory of irrigated lands and small grains

Period	Obligations	
02/01/81-09/30/82	FY83:	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Estes, J. E.	ARC/Bauer, E. H.	19-Phys Sci, NEC

**NCC 2-157 University of California - Santa Barbara 1936**  
Modeling techniques for forest management applications

Period	Obligations	
09/15/81-06/14/82	FY83:	TOTAL: \$25,390
Prin. Invest.	NASA Tech. Officer	CASE Category
Strahler, A. H.	ARC/Peterson, D. L.	39-Env Sci, NEC
	ARC/Brass, J. A.	

**NCC 5-5 University of California - Santa Barbara 1937**  
Soil moisture detection using Seasat data and radar scatterometers

Period	Obligations	
04/01/79-04/30/82	FY83:	TOTAL: \$100,575
Prin. Invest.	NASA Tech. Officer	CASE Category
Estes, J. E.	GSFC/Chang, A.	32-Geological Sci
Simonett, D. S.		

**NGR 05-010-062 University of California - Santa Barbara 1938**  
Planetary geophysics

Period	Obligations	
03/01/73-01/31/84	FY83: \$68,860	TOTAL: \$302,814
Prin. Invest.	NASA Tech. Officer	CASE Category
Peale, S. J.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	



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**NGT 05-010-800 University of California - Santa Barbara 1939**  
Graduate student researchers program

Period	Obligations	
09/01/80-08/31/83	FY83: TOTAL: \$32,754	
Prin. Invest.	NASA Tech. Officer	CASE Category
Strahler, A.	HQ-LB/Carter, C. H.	39-Env Sci, NEC

**NGT 05-010-801 University of California - Santa Barbara 1940**  
Graduate student researchers program

Period	Obligations	
09/15/81-09/14/84	FY83: \$14,000 TOTAL: \$37,500	
Prin. Invest.	NASA Tech. Officer	CASE Category
Dozier, J.	HQ-LB/Owens, F. C.	39-Env Sci, NEC

**NGT 05-010-802 University of California - Santa Barbara 1941**  
Graduate student researchers program

Period	Obligations	
09/01/82-08/31/84	FY83: \$14,300 TOTAL: \$26,100	
Prin. Invest.	NASA Tech. Officer	CASE Category
Estes, J. E.	HQ-LB/Owens, F. C.	59-Life Sci, NEC

**NGT 05-010-803 University of California - Santa Barbara 1942**  
Graduate student researchers program

Period	Obligations	
09/01/82-09/30/84	FY83: \$14,000 TOTAL: \$25,750	
Prin. Invest.	NASA Tech. Officer	CASE Category
Ozier, J. D.	HQ-LB/Owens, F. C.	99-Multi-Discip

**NSG 7586 University of California - Santa Barbara 1943**  
Magnetization of lunar samples

Period	Obligations	
05/01/79-01/31/84	FY83: \$39,309 TOTAL: \$165,300	
Prin. Invest.	NASA Tech. Officer	CASE Category
Fuller, M. D.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

**NAG 2-241 University of California - Santa Cruz 1944**

Test a MAMA

Period	Obligations	
06/01/83-05/31/84	FY83: \$11,934 TOTAL: \$11,934	
Prin. Invest.	NASA Tech. Officer	CASE Category
Jones, B. F.	ARC/Scargle, J. D.	11-Astronomy

**NAG 5-175 University of California - Santa Cruz 1945**  
Luminosity calibration of low red shift quasars

Period	Obligations	
04/15/81-07/31/83	FY83: TOTAL: \$14,739	
Prin. Invest.	NASA Tech. Officer	CASE Category
Wampler, E. J.	GSFC/Boggess, A.	11-Astronomy

**NAG 5-352 University of California - Santa Cruz 1946**

Research relative to ultraviolet spectrophotometry of normal spiral galaxies

Period	Obligations	
08/01/83-07/31/84	FY83: \$7,641 TOTAL: \$7,641	
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, J. S.	GSFC/Kondo, Y.	11-Astronomy
Goodrich, R. W.		

**NAG 8-352 University of California - Santa Cruz 1947**  
The relations between optical and X-ray emission from quasars and BL Lacertae objects

Period	Obligations	
06/27/80-06/27/82	FY83: TOTAL: \$6,321	
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, J. S.	MSFC/Swearingen, J. C.	11-Astronomy
Blumenthal, G.		

**NAG 8-407 University of California - Santa Cruz 1948**  
The relation between magnetic fields and coronae in late-type stars

Period	Obligations	
06/15/81-06/07/82	FY83: TOTAL: \$8,750	
Prin. Invest.	NASA Tech. Officer	CASE Category
Vogt, S. S.	MSFC/Stone, J. F.	11-Astronomy

**NAGW 195 University of California - Santa Cruz 1949**  
Summer workshop in astronomy and astrophysics

Period	Obligations	
05/01/81-04/30/82	FY83: TOTAL: \$6,782	
Prin. Invest.	NASA Tech. Officer	CASE Category
Faulkner, J.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
Kraft, R. P.	HQ-EZ/Holt, S. S.	
Lin, D. W.		

**NAGW 475 University of California - Santa Cruz 1950**  
Summer workshop in astronomy and astrophysics

Period	Obligations	
07/01/83-06/30/84	FY83: \$10,639 TOTAL: \$10,639	
Prin. Invest.	NASA Tech. Officer	CASE Category
Woosley, S. E.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Opp, A. G.	

**NCA 2-690102 University of California - Santa Cruz 1951**  
Radiative transfer in molecular clouds

Period	Obligations	
09/01/81-08/31/83	FY83: \$17,488 TOTAL: \$59,776	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bodenheimer, P.	ARC/Black, D. C.	11-Astronomy
Villere, K. R.		

**NCA 2-690301 University of California - Santa Cruz 1952**  
Study to define a program of spectral observations for early flights of the shuttle infrared telescope facility

Period	Obligations	
06/01/83-11/20/83	FY83: \$5,000 TOTAL: \$5,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Rank, D. M.	ARC/Erickson, E. F.	11-Astronomy
Wampler, E. J.	ARC/Witteborn, F. C.	

**NCC 2-169 University of California - Santa Cruz 1953**  
Astronomical application of IR CID technology

Period	Obligations	
12/01/81-01/31/84	FY83: \$9,945 TOTAL: \$27,571	
Prin. Invest.	NASA Tech. Officer	CASE Category
Rank, D. M.	ARC/McCreight, C. R.	11-Astronomy
	ARC/Goebel, J. H.	

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**NGR 05-061-015 University of California - Santa Cruz 1954**  
Infrared instrumentation

Period	Obligations
07/06/72-09/30/82	FY83: TOTAL: \$193,385
Prin. Invest.	NASA Tech. Officer CASE Category
Rank, D. M.	HQ-EZ/Bogges, N. W. 11-Astronomy

**NGT 05-061-800 University of California - Santa Cruz 1955**  
Graduate student researchers program

Period	Obligations
07/01/82-06/30/84	FY83: \$13,500 TOTAL: \$26,000
Prin. Invest.	NASA Tech. Officer CASE Category
Bodenheimer, P.	HQ-LB/Owens, F. C. 13-Physics

**NSG 5361 University of California - Santa Cruz 1956**  
Ultraviolet spectroscopy of Tauri stars

Period	Obligations
06/01/79-07/31/83	FY83: TOTAL: \$13,857
Prin. Invest.	NASA Tech. Officer CASE Category
Herbig, G. H.	GSFC/Kondo, Y. 11-Astronomy

**NSG 7503 University of California - Santa Cruz 1957**  
Astronomical applications of charged coupled device technology

Period	Obligations
11/01/78-10/31/83	FY83: \$28,234 TOTAL: \$91,792
Prin. Invest.	NASA Tech. Officer CASE Category
Miller, J. S.	HQ-EZ/Weiler, E. J. 11-Astronomy
	HQ-EZ/Stencel, R. E.

**NAG 2-192 University of The Pacific 1958**  
Slotted wall interference in subsonic wind tunnels of arbitrary cross section and using boundary conditions accounting for wall boundary layers

Period	Obligations
08/15/82-02/14/84	FY83: TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer CASE Category
Pejack, E. R.	ARC/Steinle, F. W., Jr. 41-Aero Engr

**NAGW 356 University of The Pacific 1959**  
Bone cell kinetics of simulated weightlessness

Period	Obligations
07/01/82-11/30/84	FY83: \$70,000 TOTAL: \$124,390
Prin. Invest.	NASA Tech. Officer CASE Category
Roberts, W. E.	HQ-EB/Halstead, T. W. 51-Biological Sci

**NCA 2-588002 University of The Pacific 1960**  
Proliferation and differentiation of periodontal ligament cells and bone cells during simulated weightlessness

Period	Obligations
03/01/80-08/31/82	FY83: TOTAL: \$33,460
Prin. Invest.	NASA Tech. Officer CASE Category
Roberts, W. E.	ARC/Holton, E. M. 59-Life Sci, NEC

**NCA 2-588201 University of The Pacific 1961**  
Test and data reduction techniques for holographic interferometry

Period	Obligations
05/01/82-02/29/84	FY83: TOTAL: \$15,663
Prin. Invest.	NASA Tech. Officer CASE Category
Perry, R. L.	ARC/Lee, G. 19-Phys Sci, NEC

**NCA 2-588202 University of The Pacific 1962**  
Development of a set of practical pedagogical engineering problems and the associated numerical solution methodologies

Period	Obligations
06/01/82-09/30/82	FY83: TOTAL: \$3,038
Prin. Invest.	NASA Tech. Officer CASE Category
Topp, W.	ARC/Reinhardt, W. 41-Aero Engr

**NCA 2-588203 University of The Pacific 1963**  
Upgrade of the aerodynamic-aeroelastic computational procedures

Period	Obligations
06/01/82-09/30/82	FY83: TOTAL: \$3,038
Prin. Invest.	NASA Tech. Officer CASE Category
Topp, W.	ARC/Goorjian, P. M. 22-Computer Science

**NCA 2-588301 University of The Pacific 1964**  
Detection of extrasolar planets by the large deployable reflector: Science rationale and technological requirements

Period	Obligations
06/28/83-08/31/83	FY83: \$2,904 TOTAL: \$2,904
Prin. Invest.	NASA Tech. Officer CASE Category
Takahashi, T.	ARC/Aclenbach, D. 11-Astronomy

**NCA 2-588302 University of The Pacific 1965**  
Applications of capillary confinement of cryogenics in space

Period	Obligations
09/06/83-05/15/84	FY83: \$3,560 TOTAL: \$3,560
Prin. Invest.	NASA Tech. Officer CASE Category
Rodriguez, F.	ARC/Kittel, P. 13-Physics

**NCC 2-224 University of The Pacific 1966**  
Bone cell activity in altered gravitational states

Period	Obligations
12/01/82-11/30/83	FY83: \$61,127 TOTAL: \$61,127
Prin. Invest.	NASA Tech. Officer CASE Category
Roberts, W. E.	ARC/Holton, E. M. 51-Biological Sci

**NAS 8-34340 University of San Francisco 1967**  
Heavy particle, passive, personnel dosimetry using, etched particles

Period	Obligations
05/28/81-06/28/84	FY83: \$20,000 TOTAL: \$55,000
Prin. Invest.	NASA Tech. Officer CASE Category
Benton, E. V.	MSFC/Parnell, T. A. 13-Physics
	MSFC/Watts, J. W.

**NAS 9-15152 University of San Francisco 1968**  
Automated analysis system for HZE particle trace dosimeters

Period	Obligations
02/01/77-12/31/83	FY83: \$110,000 TOTAL: \$693,607
Prin. Invest.	NASA Tech. Officer CASE Category
Benton, E. V.	JSC/Richmond, R. G. 56-Medical Sciences

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**NAS 9-15337 University of San Francisco 1969**  
Definition of Spacelab I experiment on high energy particle dosimetry

Period	Obligations
04/01/77-09/30/84	FY83: TOTAL: \$103,655
Prin. Invest.	NASA Tech. Officer CASE Category
Benton, E. V.	JSC/Peck, E. E. 13-Physics

**NCA 2-670101 University of San Francisco 1970**  
Histopathological evaluation of animals in radiation lifespan studies

Period	Obligations
01/01/81-12/31/82	FY83: TOTAL: \$55,865
Prin. Invest.	NASA Tech. Officer CASE Category
Benton, E. V.	ARC/Kraft, L. M. 51-Biological Sci

**NCC 2-47 University of San Francisco 1971**  
Histopathological changes in rodents caused by HZE particle irradiation

Period	Obligations
01/01/80-12/31/82	FY83: TOTAL: \$125,629
Prin. Invest.	NASA Tech. Officer CASE Category
Benton, E. V.	ARC/Kraft, L. M. 51-Biological Sci

**NCC 2-85 University of San Francisco 1972**  
Structure and function of isozymes: Evolutionary aspects and role of oxygen in eukaryotic organisms

Period	Obligations
06/01/80-11/30/83	FY83: \$45,950 TOTAL: \$150,403
Prin. Invest.	NASA Tech. Officer CASE Category
Brown, R. J.	ARC/Klein, H. P. 51-Biological Sci
Satyanarayana, T.	ARC/Jahnke, L. L.

**NCC 2-135 University of San Francisco 1973**  
Early cytological responses of cortical and trabecular bone to immobilization and the histopathogenesis of disuse osteoporosis in the restraint monkey model

Period	Obligations
07/01/81-12/31/83	FY83: \$41,878 TOTAL: \$91,061
Prin. Invest.	NASA Tech. Officer CASE Category
Brown, R. J.	ARC/Young, D. R. 56-Medical Sciences

**NAG 3-143 University of Santa Clara 1974**  
Research and development of heat alcohol fuel usage in automobiles

Period	Obligations
11/17/80-12/21/83	FY83: \$199,118 TOTAL: \$1,023,383
Prin. Invest.	NASA Tech. Officer CASE Category
Pefley, R. K.	LERC/Clark, J. S. 46-Mech Engr
Browning, L.	

**NAG 3-212 University of Santa Clara 1975**  
Correlation of single and multi-state data to improved design and analysis models for axial compressors

Period	Obligations
11/24/81-11/22/83	FY83: \$30,000 TOTAL: \$69,984
Prin. Invest.	NASA Tech. Officer CASE Category
Roberts, W. B.	LERC/Sandercock, D. M. 41-Aero Engr
Saad, M. A.	LERC/Crouse, J. E.

**NAGW 277 University of Santa Clara 1976**  
1982 summer research program in planetary biology and microbial ecology

Period	Obligations
01/15/82-06/15/83	FY83: TOTAL: \$93,041
Prin. Invest.	NASA Tech. Officer CASE Category
Nealson, K. H.	HQ-EB/Devincenzi, D. L. 51-Biological Sci
Tomlinson, G.	

**NCA 2-685002 University of Santa Clara 1977**  
Enzyme-linked immunosorbent assay (ELISA) for detecting upper respiratory tract infection

Period	Obligations
10/01/79-03/31/84	FY83: TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer CASE Category
Caren, L. D.	ARC/Mandel, A. D. 51-Biological Sci

**NCA 2-685003 University of Santa Clara 1978**  
Bioassayable growth hormone: Isolation development of a radioimmunoassay and validation of the assay

Period	Obligations
10/01/79-02/28/82	FY83: TOTAL: \$59,992
Prin. Invest.	NASA Tech. Officer CASE Category
Fast, T.	ARC/Grindeland, R. E. 51-Biological Sci

**NCA 2-685004 University of Santa Clara 1979**  
On the distribution of oxygen sensitivity among bacterial denitrifiers with particular emphasis to its ecological significance

Period	Obligations
01/01/80-05/31/82	FY83: TOTAL: \$47,164
Prin. Invest.	NASA Tech. Officer CASE Category
Tomlinson, G. A.	ARC/Hochstein, L. I. 51-Biological Sci

**NCA 2-685101 University of Santa Clara 1980**  
LANDSAT display development

Period	Obligations
02/09/81-11/30/82	FY83: TOTAL: \$20,376
Prin. Invest.	NASA Tech. Officer CASE Category
Alkhatib, H.	ARC/Jones, H. W., Jr. 39-Env Sci, NEC

**NCA 2-685102 University of Santa Clara 1981**  
Video compression development

Period	Obligations
08/01/81-03/31/83	FY83: \$15,692 TOTAL: \$58,024
Prin. Invest.	NASA Tech. Officer CASE Category
Alkhatib, H.	ARC/Jones, H. W., Jr. 22-Computer Science

**NCA 2-685202 University of Santa Clara 1982**  
A survey of legal questions precipitated by extensions of criminal jurisdiction over U. S. Sponsored space activities

Period	Obligations
10/01/81-10/01/82	FY83: TOTAL: \$7,000
Prin. Invest.	NASA Tech. Officer CASE Category
Berg, R.	ARC/Glazer, J. H. 99-Multi-Discip

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**NCA 2-685203**      **University of Santa Clara**      **1983**  
Nitrite reductases in denitrifying bacteria

Period	Obligations	
06/01/82-05/31/84	FY83: \$12,100	TOTAL: \$21,644
Prin. Invest.	NASA Tech. Officer	CASE Category
Tomlinson, G. A.	ARC/Hochstein, L. I.	54-Env Biology

**NCC 2-60**      **University of Santa Clara**      **1990**  
Wind tunnel simulations of Martian sand storms

Period	Obligations	
02/01/80-04/30/84	FY83: \$67,874	TOTAL: \$271,083
Prin. Invest.	NASA Tech. Officer	CASE Category
Greeley, R.	ARC/Margozzi, A. P.	99-Multi-Discip
Leach, R.		

**NCA 2-685301**      **University of Santa Clara**      **1984**  
Image display and analysis system (joint research interchange)

Period	Obligations	
12/01/82-11/30/83	FY83: \$12,643	TOTAL: \$12,643
Prin. Invest.	NASA Tech. Officer	CASE Category
Alkhatib, H.	ARC/Jones, H. W., Jr.	22-Computer Science

**NCC 2-98**      **University of Santa Clara**      **1991**  
Investigation on the characteristics of turbulence on a step change of transverse surface strain in the swirling boundary layer

Period	Obligations	
10/01/80-07/31/83	FY83:	TOTAL: \$46,432
Prin. Invest.	NASA Tech. Officer	CASE Category
Higuchi, H.	ARC/Rubesin, M. W.	41-Aero Engr
	ARC/Marvin, J. G.	

**NCA 2-685302**      **University of Santa Clara**      **1985**  
Fire protection studies of materials used for acoustic insulation in aircraft walls

Period	Obligations	
04/01/83-07/15/84	FY83: \$19,926	TOTAL: \$19,926
Prin. Invest.	NASA Tech. Officer	CASE Category
Saad, M. A.	ARC/Altman, R. L.	12-Chemistry

**NCC 2-128**      **University of Santa Clara**      **1992**  
Visual prosthetic devices using texture analysis

Period	Obligations	
06/15/81-12/31/83	FY83: \$30,740	TOTAL: \$91,012
Prin. Invest.	NASA Tech. Officer	CASE Category
Healy, T. J.	ARC/Grant, T. L.	45-Elec Engr
	ARC/Lum, H.	

**NCA 2-685303**      **University of Santa Clara**      **1986**  
Initial investigation into the long-haul communications subsystem traffic model

Period	Obligations	
07/18/83-10/31/83	FY83: \$4,447	TOTAL: \$4,447
Prin. Invest.	NASA Tech. Officer	CASE Category
Alkhatib, H. S.	ARC/Jones, H. W., Jr.	22-Computer Science
	ARC/Connors, M. M.	

**NCC 2-130**      **University of Santa Clara**      **1993**  
Interpretation of Pioneer Venus orbiter data (PVOD) with the two-dimensional ionosphere model

Period	Obligations	
06/01/81-10/31/83	FY83: \$12,998	TOTAL: \$28,789
Prin. Invest.	NASA Tech. Officer	CASE Category
McCormick, P. T.	ARC/Whitten, R. C.	19-Phys Sci, NEC

**NCA 2-685304**      **University of Santa Clara**      **1987**  
Investigation into micro-computer communication via satellite

Period	Obligations	
08/08/83-06/30/84	FY83: \$9,147	TOTAL: \$9,147
Prin. Invest.	NASA Tech. Officer	CASE Category
Alkhatib, H. S.	ARC/Jones, H. W., Jr.	22-Computer Science

**NCC 2-166**      **University of Santa Clara**      **1994**  
Model reactions for prebiotic translation in fluctuating clay environments

Period	Obligations	
01/01/82-12/31/83	FY83: \$54,039	TOTAL: \$74,039
Prin. Invest.	NASA Tech. Officer	CASE Category
White, D. H.	ARC/Chang, S.	12-Chemistry

**NCC 2-16**      **University of Santa Clara**      **1988**  
The effect of boundary conditions on finite difference solutions of fluid flow problems

Period	Obligations	
07/01/79-10/31/83	FY83: \$28,223	TOTAL: \$148,476
Prin. Invest.	NASA Tech. Officer	CASE Category
Vinokur, M.	ARC/Lomax, H.	21-Mathematics

**NCC 2-170**      **University of Santa Clara**      **1995**  
The Muljadi blot: A means to determine clay-organic interactions

Period	Obligations	
12/01/81-08/31/83	FY83: \$500	TOTAL: \$23,975
Prin. Invest.	NASA Tech. Officer	CASE Category
Sweeney, M.	ARC/Lawless, J. G.	12-Chemistry

**NCC 2-49**      **University of Santa Clara**      **1989**  
An analysis of anticipated psychosocial requirements for future space flight

Period	Obligations	
11/01/79-10/31/83	FY83:	TOTAL: \$24,957
Prin. Invest.	NASA Tech. Officer	CASE Category
Akins, F. R.	ARC/Connors, M.	61-Biol Aspects

**NCC 2-180**      **University of Santa Clara**      **1996**  
Growth hormone secretion during space flight and evaluation of the physiological responses of animals held in the research animal holding facility (RAHF)

Period	Obligations	
03/01/82-02/29/84	FY83: \$57,630	TOTAL: \$94,481
Prin. Invest.	NASA Tech. Officer	CASE Category
East, T. N.	ARC/Grindeland, R. E.	51-Biological Sci

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**NCC 2-191**      **University of Santa Clara**      **1997**  
Studies in helicopter noise  
*Period*      *Obligations*  
04/28/82-04/27/84      FY83: \$61,526      TOTAL: \$118,076  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Aggarwal, H. A.      ARC/Davis, S. S.      41-Aero Engr

**NAGW 57**      **University of Southern California**      **2004**  
Comparative planetary aeronomy: Venus studies  
*Period*      *Obligations*  
04/01/80-03/31/84      FY83: \$38,362      TOTAL: \$109,370  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Kumar, S.      HQ-EL/Brinton, H. C.      31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NAG 1-235**      **University of Southern California**      **1998**  
Finite element analysis of wrinkling membranes  
*Period*      *Obligations*  
12/01/81-06/30/83      FY83:      TOTAL: \$51,761  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Miller, R. K.      LARC/Fichter, W. B.      41-Aero Engr  
Weingarten, V. I.

**NAGW 62**      **University of Southern California**      **2005**  
A scientific program in planetary atmospheric studies  
*Period*      *Obligations*  
05/01/80-01/31/84      FY83: \$96,676      TOTAL: \$443,201  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Broadfoot, A. L.      HQ-EL/Brinton, H. C.      11-Astronomy  
HQ-EL/Brunk, W. E.

**NAG 2-77**      **University of Southern California**      **1999**  
Slater orbitals in quantum chemistry calculations  
*Period*      *Obligations*  
01/01/81-12/31/83      FY83: \$64,946      TOTAL: \$169,409  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Segal, G. A.      ARC/Langhoff, S. R.      12-Chemistry  
Partridge, H.

**NAGW 106**      **University of Southern California**      **2006**  
A study of the Io plasma torus  
*Period*      *Obligations*  
11/01/80-11/30/83      FY83: \$37,757      TOTAL: \$141,414  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Shemansky, D. E.      HQ-EL/Brinton, H. C.      11-Astronomy  
HQ-EL/Brunk, W. E.

**NAG 2-146**      **University of Southern California**      **2000**  
Pioneer 10/11 data analysis of the ultraviolet photometry experiment  
*Period*      *Obligations*  
10/01/81-12/31/83      FY83: \$125,000      TOTAL: \$210,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Judge, D. L.      ARC/Fimmel, R. O.      19-Phys Sci, NEC

**NAGW 146**      **University of Southern California**      **2007**  
Dynamics of the Jovian atmospheres (JDAP)  
*Period*      *Obligations*  
04/01/81-04/30/84      FY83: \$31,000      TOTAL: \$98,025  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Maxworthy, T.      HQ-EL/Brinton, H. C.      31-Atmos Sci  
Redekopp, L.      HQ-EL/Brunk, W. E.

**NAG 5-126**      **University of Southern California**      **2001**  
Search for shell lines and variability in the ultraviolet spectrum  
*Period*      *Obligations*  
10/15/80-10/14/82      FY83:      TOTAL: \$4,600  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Peters, G.      GSFC/Corrigan, J. P.      11-Astronomy

**NAGW 147**      **University of Southern California**      **2008**  
Stellar observations with the Voyager extreme ultraviolet objective grating spectrograph  
*Period*      *Obligations*  
03/01/81-02/29/84      FY83: \$47,837      TOTAL: \$97,837  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Barry, P.      HQ-EZ/Weiler, E. J.      11-Astronomy  
Holberg, J. B.      HQ-EL/Brunk, W. E.

**NAGW 13**      **University of Southern California**      **2002**  
A three-dimensional observational study of the solar 5-minute oscillations  
*Period*      *Obligations*  
01/01/80-01/31/84      FY83: \$104,696      TOTAL: \$330,496  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Rhodes, E. J.      HQ-EZ/Chipman, E.      13-Physics

**NAGW 161**      **University of Southern California**      **2009**  
Jovian disk and auroral observations: Continuing analysis plan  
*Period*      *Obligations*  
04/01/81-08/31/83      FY83:      TOTAL: \$133,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Broadfoot, L. A.      HQ-EL/Brinton, H. C.      13-Physics  
HQ-EL/Brunk, W. E.

**NAGW 43**      **University of Southern California**      **2003**  
Creep of orthoenstatite at high temperature and low strain rates  
*Period*      *Obligations*  
03/01/80-02/29/84      FY83: \$30,044      TOTAL: \$172,843  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Sammis, C. G.      HQ-EL/Quaide, W. L.      32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 163**      **University of Southern California**      **2010**  
A proposed study of the temporal morphology of the Io plasma utilizing the Pioneer and Voyager extreme ultraviolet data  
*Period*      *Obligations*  
04/01/81-03/31/84      FY83: \$44,743      TOTAL: \$124,743  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Judge, D. L.      HQ-EL/Brinton, H. C.      31-Atmos Sci  
Broadfoot, L.      HQ-EL/Brunk, W. E.  
Kunc, J.

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**NAGW 315 University of Southern California 2011**  
Investigation of the atmosphere of Io and its interaction with the plasma torus: Voyager IRIS data analysis

Period	Obligations	
04/01/82-10/14/83	FY83: TOTAL: \$43,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kumar, S.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Brunk, W. E.	

**NAGW 316 University of Southern California 2012**  
Particle excitation, airglow and H2 vibrational disequilibrium in the atmosphere of Jupiter

Period	Obligations	
04/01/82-05/14/84	FY83: \$30,045 TOTAL: \$80,045	
Prin. Invest.	NASA Tech. Officer	CASE Category
Shemansky, D. E.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Brunk, W. E.	

**NAGW 317 University of Southern California 2013**  
Fluorescence studies of phytoplankton pigments: A comparison of classical and laser spectroscopy

Period	Obligations	
04/01/82-03/31/83	FY83: TOTAL: \$34,100	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kiefer, D.	HQ-EE/Carder, K. L.	33-Oceanography
Soo Hoo, J. B.	HQ-EE/Wilson, W. S.	

**NAGW 335 University of Southern California 2014**  
Acoustic applications to ocean productivity: Instrument development and testing

Period	Obligations	
04/15/82-04/14/83	FY83: TOTAL: \$48,202	
Prin. Invest.	NASA Tech. Officer	CASE Category
Pieper, R. E.	HQ-EE/Carder, K. L.	33-Oceanography
	HQ-EE/Wilson, W. S.	

**NASW 3461 University of Southern California 2015**  
Technology transfer to minority enterprises

Period	Obligations	
01/12/81-06/30/82	FY83: TOTAL: \$82,318	
Prin. Invest.	NASA Tech. Officer	CASE Category
King, R. G.	HQ-ET/Gilbert, R. L.	99-Multi-Discip
Mixer, R.	HQ-ET/Whitten, R.	

**NASW 3470 University of Southern California 2016**  
Operation of NASA Industrial Application center

Period	Obligations	
04/01/81-03/31/82	FY83: TOTAL: \$277,677	
Prin. Invest.	NASA Tech. Officer	CASE Category
Mixer, R.	HQ-ET/Bivins, R. G.	99-Multi-Discip
King, R.	HQ-ET/Ault, L. A.	

**NCA 2-730101 University of Southern California 2017**  
The escape of H2O from Venus

Period	Obligations	
07/01/81-06/30/83	FY83: TOTAL: \$35,001	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kumar, S.	ARC/Pollack, J. B.	11-Astronomy

**NGR 05-018-178 University of Southern California 2018**  
Dynamics of rotating-stratified flows with applications to the Jovian atmosphere

Period	Obligations	
09/11/72-08/31/82	FY83: TOTAL: \$464,265	
Prin. Invest.	NASA Tech. Officer	CASE Category
Maxworthy, T.	HQ-EL/Murphy, R. E.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NGR 05-018-180 University of Southern California 2019**  
Photon-molecule interaction studies of the atmospheric gases

Period	Obligations	
08/31/72-04/30/84	FY83: \$68,590 TOTAL: \$651,078	
Prin. Invest.	NASA Tech. Officer	CASE Category
Judge, D. L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NSG 5108 University of Southern California 2020**  
Rocket experiments to measure the solar intensity and profile

Period	Obligations	
04/01/76-12/31/83	FY83: \$97,914 TOTAL: \$701,222	
Prin. Invest.	NASA Tech. Officer	CASE Category
Judge, D. L.	GSFC/Early, L. J.	13-Physics
Carlson, R. W.	GSFC/Pless, R. H.	

**NSG 5422 University of Southern California 2021**  
A comparative study of the far ultraviolet spectra of BE stars

Period	Obligations	
10/15/79-12/31/83	FY83: \$4,845 TOTAL: \$49,545	
Prin. Invest.	NASA Tech. Officer	CASE Category
Peters, G. J.	GSFC/Kondo, Y.	11-Astronomy
Polidan, R. S.		

**NSG 7367 University of Southern California 2022**  
Complementary pairing of amino acids, Schiff bases and a reverse translation mechanism for the origin of the genetic code under prebiotic conditions

Period	Obligations	
10/01/77-08/31/83	FY83: TOTAL: \$327,094	
Prin. Invest.	NASA Tech. Officer	CASE Category
Strehler, B. L.	HQ-EB/Geib, D. S.	51-Biological Sci

**NSG 7535 University of Southern California 2023**  
Development of room temperature mercuric iodide X-ray detectors for in-site analysis of extra terrestrial objects

Period	Obligations	
01/26/79-11/30/83	FY83: \$124,409 TOTAL: \$398,513	
Prin. Invest.	NASA Tech. Officer	CASE Category
Dabrowski, A. J.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/Taylor, L. A.	

**NSG 7595 University of Southern California 2024**  
A study of atmospheric development of exospheric planetary bodies

Period	Obligations	
05/01/79-01/31/82	FY83: TOTAL: \$91,792	
Prin. Invest.	NASA Tech. Officer	CASE Category
Shemansky, D. E.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

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**NSG 7644 University of Southern California 2025**  
Application of improved detector technology to a continuing  
program of solar-system observations

<i>Period</i>	<i>Obligations</i>	
11/02/79-06/30/83	FY83: TOTAL: \$330,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Broadfoot, A. L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**COLORADO**

**NAG 3-197 Colorado School of Mines 2026**  
Studies of the mechanisms of jet fuel/instability

<i>Period</i>	<i>Obligations</i>	
08/01/81-07/29/84	FY83: \$65,867 TOTAL: \$172,180	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Daniel, S. R.	LERC/Bittker, D. A.	12-Chemistry

**NAG 2-157 Colorado State University 2027**  
Experiments with phase transitions at very high pressure

<i>Period</i>	<i>Obligations</i>	
01/01/82-12/31/83	FY83: \$50,000 TOTAL: \$150,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Spain, I. L.	ARC/Nelson, H. G.	47-Materials Engr

**NAG 2-171 Colorado State University 2028**

High pressures properties of hydrogen and other atomic and  
molecular solids, methods for utilizing atomic hydrogen as a  
fuel, and properties of finite systems in 2 and 3 dimensions

<i>Period</i>	<i>Obligations</i>	
05/01/82-12/31/83	FY83: \$2,915 TOTAL: \$52,898	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Etters, R. D.	ARC/Nelson, H. G.	47-Materials Engr

**NAG 3-25 Colorado State University 2029**

Ion implantation to inhibit the corrosion of ferrous metals

<i>Period</i>	<i>Obligations</i>	
02/01/80-08/14/84	FY83: TOTAL: \$9,301	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilbur, P. J.	LERC/Kerslake, W. R.	47-Materials Engr
Robinson, R. S.		

**NAG 3-40 Colorado State University 2030**

Development of models for nonlinear fracture processes

<i>Period</i>	<i>Obligations</i>	
06/01/80-07/15/82	FY83: TOTAL: \$77,836	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, F. W.	LERC/Smith, G. T.	46-Mech Engr
	LERC/Orange, T. W.	

**NAG 3-209 Colorado State University 2031**

Sputtering phenomena in ion thrusters

<i>Period</i>	<i>Obligations</i>	
12/01/81-02/28/83	FY83: TOTAL: \$29,660	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Robinson, R. S.	LERC/Mantenieks, M. A.	13-Physics
Kaufman, H. R.		

**NAG 5-58 Colorado State University 2032**

A laboratory investigation of the reflective properties of simulated,  
optically thick clouds

<i>Period</i>	<i>Obligations</i>	
05/15/80-09/30/82	FY83: TOTAL: \$134,249	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McKee, T. B.	GSFC/King, M. D.	31-Atmos Sci

**NAG 5-136 Colorado State University 2033**

Atmospheric planetary wave response to extreme forcing

<i>Period</i>	<i>Obligations</i>	
02/01/81-03/31/84	FY83: \$72,257 TOTAL: \$209,034	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stevens, D. E.	GSFC/Shukla, J.	31-Atmos Sci
Reiter, E. R.	GSFC/Randall, D.	

**NAG 5-276 Colorado State University 2034**

Reflectance modeling for predicting bidirectional reflectance  
distribution patterns

<i>Period</i>	<i>Obligations</i>	
09/15/82-09/14/84	FY83: \$89,968 TOTAL: \$192,963	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, J. A.	GSFC/Kimes, D. S.	55-Agriculture Sci

**NAG 5-299 Colorado State University 2035**

Research relative to improving tropical cyclone forecasting

<i>Period</i>	<i>Obligations</i>	
03/01/83-02/29/84	FY83: \$50,000 TOTAL: \$50,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gray, W. M.	GSFC/Rodgers, E.	31-Atmos Sci
	GSFC/Adler, R.	

**NAG 5-359 Colorado State University 2036**

Sea breeze induced mesoscale systems and severe weather

<i>Period</i>	<i>Obligations</i>	
08/01/83-04/30/84	FY83: \$60,000 TOTAL: \$60,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pielke, R. A.	GSFC/Keyser, D.	31-Atmos Sci
	GSFC/Uccellini, L.	

**NAG 9-10 Colorado State University 2037**

Life spans of skin fibroblasts from irradiated primates

<i>Period</i>	<i>Obligations</i>	
06/16/80-02/29/84	FY83: \$70,000 TOTAL: \$192,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lett, J. T.	JSC/Nachtwey, D. S.	54-Env Biology

**NAGW 8 Colorado State University 2038**

Experiments with phase transitions at very high pressure

<i>Period</i>	<i>Obligations</i>	
10/01/79-09/15/83	FY83: TOTAL: \$185,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Spain, I. L.	LERC/Jones, W. R.	13-Physics

**NASA'S UNIVERSITY PROGRAM  
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**NAS 1-16465** **Colorado State University** **2039**  
Scientific investigations for the Earth radiation budget experiment (ERBE)  
*Period* *Obligations*  
09/30/80-09/30/85 FY83: \$41,000 TOTAL: \$104,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Vonderhaar, T. H. LARC/Hall, J. B. 31-Atmos Sci  
LARC/Barkstrom, B. R.

**NAS 5-22959** **Colorado State University** **2040**  
Earth radiation budget sensor support  
*Period* *Obligations*  
01/23/76-09/30/82 FY83: TOTAL: \$220,086  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Vonderhaar, T. H. GSFC/Cherrix, G. T. 39-Env Sci, NEC

**NCA 2-165201** **Colorado State University** **2041**  
A multilevel scheme for the Cauchy-Riemann equations  
*Period* *Obligations*  
06/01/82-12/31/83 FY83: \$16,060 TOTAL: \$22,560  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Thomas, J. W. ARC/Lomax, H. 21-Mathematics

**NGR 06-002-112** **Colorado State University** **2042**  
An experimental investigation of hollow cathode discharge start-up and operation  
*Period* *Obligations*  
12/21/70-10/30/83 FY83: TOTAL: \$913,951  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wilbur, P. J. LERC/Kerslake, W. R. 46-Mech Engr

**NGT 06-002-800** **Colorado State University** **2043**  
Graduate student researchers program  
*Period* *Obligations*  
09/01/80-08/31/83 FY83: TOTAL: \$34,910  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Smith, J. A. HQ-LB/Carter, C. H. 54-Env Biology

**NSG 1594** **Colorado State University** **2044**  
Approaching the ultimate velocimeter: Laser techniques for measuring molecular flows  
*Period* *Obligations*  
02/01/79-02/29/84 FY83: \$57,640 TOTAL: \$316,151  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
She, C. Y. LARC/Exton, R. J. 13-Physics  
Lee, S. A. LARC/Hillard, M. E.

**NSG 3011** **Colorado State University** **2045**  
Experimental investigations of argon and xenon ion sources  
*Period* *Obligations*  
07/01/74-03/27/85 FY83: \$120,339 TOTAL: \$676,257  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kaufman, H. R. LERC/Rawlin, V. K. 13-Physics  
Robinson, R. S.

**NSG 3127** **Colorado State University** **2046**  
Effects of turbulence on laminar separation on aerodynamic surfaces such as airfoils blading  
*Period* *Obligations*  
10/01/76-09/19/83 FY83: TOTAL: \$328,837  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sadeh, W. Z. LERC/Sockol, P. M. 41-Aero Engr

**NSG 3196** **Colorado State University** **2047**  
Space environmental effects on high voltage solar arrays  
*Period* *Obligations*  
05/15/78-12/12/82 FY83: TOTAL: \$166,278  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kaufman, H. R. LERC/Grier, N. T. 13-Physics

**NAG 5-162** **Fort Lewis College** **2048**  
Dynamic processing element memory allocation for the massively parallel processor  
*Period* *Obligations*  
04/01/81-10/31/82 FY83: TOTAL: \$26,621  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bell, G. W. GSFC/Fischer, J. R. 22-Computer Science

**NAG 1-59** **University of Colorado - Boulder** **2049**  
Effect of external flow in existing turbulence  
*Period* *Obligations*  
04/03/80-04/02/83 FY83: TOTAL: \$70,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Uberoi, M. S. LARC/Stainback, P. C. 41-Aero Engr  
LARC/Harvey, W. D.

**NAG 1-170** **University of Colorado - Boulder** **2050**  
Molecular photofragmentation processes related to solar-pumped gas laser development  
*Period* *Obligations*  
04/01/81-09/30/82 FY83: TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Leone, S. R. LARC/Jalufka, N. W. 13-Physics  
LARC/Conway, E. J.

**NAG 2-58** **University of Colorado - Boulder** **2051**  
Influence of gravity independent parameters on the constitutive behavior of soil  
*Period* *Obligations*  
08/01/80-06/30/83 FY83: TOTAL: \$95,420  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sture, S. ARC/Brooks, W. F. 44-Civil Engr  
ARC/Lum, H.

**NAG 2-178** **University of Colorado - Boulder** **2052**  
Pioneer class planetary missions mission definition and analysis support  
*Period* *Obligations*  
04/01/82-09/30/83 FY83: TOTAL: \$24,998  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stuart, J. R. ARC/Jackson, R. W. 42-Astro Engr  
ARC/Murphy, J. P.



**NASA'S UNIVERSITY PROGRAM  
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**NAG 2-197 University of Colorado - Boulder 2053**  
Low cost Mars mission assessment

Period	Obligations
07/01/82-06/30/83	FY83: TOTAL: \$19,999
Prin. Invest.	NASA Tech. Officer CASE Category
Stuart, J. R.	ARC/Jackson, R. W. 42-Astro Engr
	ARC/Murphy, J. P.

**NAG 5-199 University of Colorado - Boulder 2060**  
International Ultraviolet Experiment studies

Period	Obligations
07/15/81-11/30/83	FY83: \$38,468 TOTAL: \$77,768
Prin. Invest.	NASA Tech. Officer CASE Category
Ayres, L. R.	GSFC/Kondo, Y. 11-Astronomy
Rottman, G. C.	
Brown, A.	

**NAG 3-342 University of Colorado - Boulder 2054**  
Thermocapillary and diffusocapillary migration of a fluid drop

Period	Obligations
02/15/83-02/14/84	FY83: \$19,999 TOTAL: \$19,999
Prin. Invest.	NASA Tech. Officer CASE Category
Sani, R. L.	LERC/Chai, A. T. 13-Physics

**NAG 5-211 University of Colorado - Boulder 2061**  
Multi-anode microchannel array detector systems

Period	Obligations
10/01/81-12/31/83	FY83: \$50,099 TOTAL: \$148,064
Prin. Invest.	NASA Tech. Officer CASE Category
Timothy, J. G.	GSFC/Early, L. J. 11-Astronomy
	GSFC/Pless, R. H.

**NAG 5-78 University of Colorado - Boulder 2055**  
Spectroscopic observations of selected stellar systems

Period	Obligations
07/01/80-11/30/83	FY83: \$21,000 TOTAL: \$73,360
Prin. Invest.	NASA Tech. Officer CASE Category
Conti, P. S.	GSFC/Kondo, Y. 11-Astronomy
Garmany, C. D.	

**NAG 5-212 University of Colorado - Boulder 2062**  
Research relative to middle atmosphere solar irradiance rocket measurements

Period	Obligations
10/15/81-12/14/83	FY83: \$110,000 TOTAL: \$347,058
Prin. Invest.	NASA Tech. Officer CASE Category
Mount, G. H.	GSFC/Mentall, J. E. 31-Atmos Sci
Rottman, G. J.	

**NAG 5-82 University of Colorado - Boulder 2056**  
International Ultraviolet Explorer (IUE) studies of cool stars

Period	Obligations
07/01/80-01/31/84	FY83: \$60,300 TOTAL: \$200,050
Prin. Invest.	NASA Tech. Officer CASE Category
Linsky, J. L.	GSFC/Kondo, Y. 11-Astronomy
Walter, F. M.	
Ayres, T. R.	

**NAG 5-213 University of Colorado - Boulder 2063**  
Studies of the cyprus superbubble

Period	Obligations
11/01/81-10/31/82	FY83: TOTAL: \$10,565
Prin. Invest.	NASA Tech. Officer CASE Category
Cash, W. C., Jr.	GSFC/Boggess, A. 11-Astronomy
Shull, J. M.	

**NAG 5-96 University of Colorado - Boulder 2057**  
Study of reflection grating spectrometers for X-ray astronomy

Period	Obligations
09/01/80-08/15/84	FY83: \$126,964 TOTAL: \$379,348
Prin. Invest.	NASA Tech. Officer CASE Category
Cash, W. C.	GSFC/Early, L. J. 11-Astronomy
	WFC/Pless, R. H.

**NAG 5-350 University of Colorado - Boulder 2064**  
Analysis of selected symbiotic stars

Period	Obligations
08/01/83-07/31/84	FY83: \$8,700 TOTAL: \$8,700
Prin. Invest.	NASA Tech. Officer CASE Category
Brugal, E. W.	GSFC/Kondo, Y. 11-Astronomy
Willson, L. A.	

**NAG 5-142 University of Colorado - Boulder 2058**  
Research relative to short-term cryosphere cloud interactions near the snow/ice limit

Period	Obligations
03/01/81-11/15/83	FY83: TOTAL: \$110,545
Prin. Invest.	NASA Tech. Officer CASE Category
Barry, R. G.	GSFC/Zwally, H. J. 31-Atmos Sci
	GSFC/Parkinson, C. L.

**NAG 8-398 University of Colorado - Boulder 2065**  
A sensitive search for coronal emission from the archetype giants (BOO and AQR)

Period	Obligations
06/03/81-06/02/82	FY83: TOTAL: \$7,355
Prin. Invest.	NASA Tech. Officer CASE Category
Ayres, T. R.	MSFC/Stone, J. F. 11-Astronomy

**NAG 5-193 University of Colorado - Boulder 2059**  
Spectroscopic studies of interstellar matter and stellar mass loss

Period	Obligations
07/01/81-10/31/83	FY83: \$32,500 TOTAL: \$62,520
Prin. Invest.	NASA Tech. Officer CASE Category
Shull, J. M.	GSFC/Kondo, Y. 11-Astronomy
Brugel, E. W.	

**NAG 8-424 University of Colorado - Boulder 2066**  
Monitoring soft X-ray variability in three O stars

Period	Obligations
01/01/82-12/31/82	FY83: TOTAL: \$6,616
Prin. Invest.	NASA Tech. Officer CASE Category
Snow, T. P., Jr.	MSFC/Stone, J. F. 11-Astronomy
Cash, W. C., Jr.	
Grady, C. A.	

# **NASA'S UNIVERSITY PROGRAM** **COLORADO (Continued)**

**NAG 8-439 University of Colorado - Boulder 2067**  
The rotation-activity connection in single F0-G5 stars, RS CVN survey follow-up, an investigation of the two component corona, rapidly rotating G giants: The FK Comae stars

Period	Obligations	
07/30/82-07/29/83	FY83:	TOTAL: \$7,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Linsky, J.	MSFC/Stone, J. F.	11-Astronomy
Walter, F.		

**NAGW 91 University of Colorado - Boulder 2068**  
Turbulence and wave-particle interactions in solar-terrestrial plasmas

Period	Obligations	
07/01/80-06/30/84	FY83: \$230,000	TOTAL: \$855,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Dulk, G. A.	HQ-EE/Butler, D. M.	13-Physics

**NAGW 155 University of Colorado - Boulder 2069**  
A program to study high altitude cloud distributions for the Jupiter data analysis program

Period	Obligations	
04/01/81-04/30/84	FY83: \$58,000	TOTAL: \$145,473
Prin. Invest.	NASA Tech. Officer	CASE Category
Hord, C. W.	HQ-EL/Brinton, H. C.	13-Physics
West, R. A.	HQ-EL/Evans, N.	

**NAGW 156 University of Colorado - Boulder 2070**  
Analysis of Voyager imaging methane band photometry

Period	Obligations	
04/01/81-03/31/84	FY83: \$48,000	TOTAL: \$99,000
Prin. Invest.	NASA Tech. Officer	CASE Category
West, R. A.	HQ-EL/Brinton, H. C.	31-Atmos Sci

**NAGW 197 University of Colorado - Boulder 2071**  
Theoretical research programs in physics at planetary atmospheres, radiative transfer theory and data interpretation

Period	Obligations	
07/01/81-08/31/83	FY83:	TOTAL: \$123,633
Prin. Invest.	NASA Tech. Officer	CASE Category
Hord, C. W.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 203 University of Colorado - Boulder 2072**  
Study of grazing incidence spectrometer for ultraviolet astronomy

Period	Obligations	
05/15/81-08/14/83	FY83:	TOTAL: \$52,918
Prin. Invest.	NASA Tech. Officer	CASE Category
Cash, W. C.	HQ-EZ/Weiler, E. J.	11-Astronomy

**NAGW 292 University of Colorado - Boulder 2073**  
Studies of odd nitrogen in Earth's atmosphere

Period	Obligations	
01/01/82-02/28/84	FY83: \$25,000	TOTAL: \$49,992
Prin. Invest.	NASA Tech. Officer	CASE Category
Rusch, D. W.	HQ-EE/Chandra, S.	31-Atmos Sci
	HQ-EE/Watson, R. T.	

**NAGW 343 University of Colorado - Boulder 2074**  
Pulse-counting imaging detector system for solar system studies

Period	Obligations	
07/01/82-10/31/83	FY83:	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Timothy, J. G.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 358 University of Colorado - Boulder 2075**  
The development of mini-microchannel plate detectors for planetary ultraviolet spectroscopy

Period	Obligations	
08/15/82-01/14/84	FY83: \$74,889	TOTAL: \$152,619
Prin. Invest.	NASA Tech. Officer	CASE Category
Barth, C.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 363 University of Colorado - Boulder 2076**  
Pilot study and evaluation of a SMMR-derived sea ice data base

Period	Obligations	
07/15/82-06/30/84	FY83: \$24,836	TOTAL: \$46,766
Prin. Invest.	NASA Tech. Officer	CASE Category
Barry, R. G.	HQ-EE/Thomas, R. H.	33-Oceanography
	HQ-EE/Wilson, W. S.	

**NAGW 389 University of Colorado - Boulder 2077**  
Theoretical research in physics of planetary atmospheres; Global studies of atmospheric constituents and dynamics

Period	Obligations	
11/01/82-10/31/83	FY83: \$150,511	TOTAL: \$150,511
Prin. Invest.	NASA Tech. Officer	CASE Category
Esposito, L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
Stewart, I.	HQ-EL/Evans, N.	

**NAGW 396 University of Colorado - Boulder 2078**  
The evaluation of a deformable diffraction grating for a stigmatic EUV spectroheliometer

Period	Obligations	
02/01/83-01/31/84	FY83: \$26,928	TOTAL: \$26,928
Prin. Invest.	NASA Tech. Officer	CASE Category
Timothy, J. G.	HQ-EZ/Chipman, E.	13-Physics

**NAGW 404 University of Colorado - Boulder 2079**  
Magnetic probing of the solar interior

Period	Obligations	
02/01/83-12/31/83	FY83: \$55,042	TOTAL: \$55,042
Prin. Invest.	NASA Tech. Officer	CASE Category
Nelson, L. D.	HQ-E/Rosendhal, J. D.	31-Atmos Sci

**NAGW 495 University of Colorado - Boulder 2080**  
The Mars atmospheric structure, water vapor and ozone

Period	Obligations	
09/01/83-02/29/84	FY83: \$19,343	TOTAL: \$19,343
Prin. Invest.	NASA Tech. Officer	CASE Category
Jakosky, B. M.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

# **NASA'S UNIVERSITY PROGRAM** **COLORADO (Continued)**

**NAS 2-9477 University of Colorado - Boulder 2081**  
Pioneer Venus data analysis of the orbiter ultraviolet spectrometer experiment  
*Period* *Obligations*  
08/30/77-09/30/83 FY83: \$175,160 TOTAL: \$1,114,411  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stewart, I. A. ARC/Fimmel, R. O. 19-Phys Sci, NEC  
Thomas, G. E.

**NAS 5-11405 University of Colorado - Boulder 2082**  
University of Colorado ultraviolet nitric oxide experiment for atmosphere Explorer  
*Period* *Obligations*  
03/17/71-05/31/83 FY83: TOTAL: \$1,095,632  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stewart, A. I. GSFC/Bullock, G. D. 31-Atmos Sci

**NAS 5-25957 University of Colorado - Boulder 2083**  
Magnetic field monitor satellite investigation: Investigation of geomagnetic field forecasting and fluid dynamics of the core  
*Period* *Obligations*  
12/27/79-11/26/82 FY83: TOTAL: \$78,446  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Benton, E. R. GSFC/Oseroff, H. 32-Geological Sci

**NAS 5-26172 University of Colorado - Boulder 2084**  
Study of the ultraviolet solar spectral irradiance experiment for the upper atmosphere research satellites (UARS)  
*Period* *Obligations*  
09/23/80-09/30/83 FY83: \$205,524 TOTAL: \$580,981  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rottman, G. J. GSFC/Browne, W. E. 31-Atmos Sci  
London, J.

**NAS 5-26303 University of Colorado - Boulder 2085**  
Study of the response of upper atmosphere parameters to variation of solar activity (UARS)  
*Period* *Obligations*  
10/01/80-12/30/81 FY83: TOTAL: \$24,999  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
London, J. GSFC/Reber, C. A. 31-Atmos Sci

**NAS 5-26409 University of Colorado - Boulder 2086**  
Operation of the IUE Data Center at Boulder  
*Period* *Obligations*  
03/24/81-03/31/84 FY83: \$128,374 TOTAL: \$301,269  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Snow, T. P. GSFC/Mead, J. M. 11-Astronomy

**NAS 5-26535 University of Colorado - Boulder 2087**  
Study of solar energetic particles acceleration and propagation  
*Period* *Obligations*  
04/23/81-05/31/83 FY83: TOTAL: \$25,450  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Zweibel, E. G. GSFC/Ramaty, R. 13-Physics

**NAS 5-27236 University of Colorado - Boulder 2088**  
Crustal dynamics investigation of the eastern Mediterranean  
*Period* *Obligations*  
05/06/82-05/05/84 FY83: \$30,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wyss, M. GSFC/Mead, G. D. 32-Geological Sci

**NAS 5-27263 University of Colorado - Boulder 2089**  
A study of the response of upper atmosphere parameters to variations of solar activity  
*Period* *Obligations*  
07/07/82-12/31/83 FY83: \$25,481 TOTAL: \$53,303  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
London, J. GSFC/Donley, J. 31-Atmos Sci

**NAS 5-27359 University of Colorado - Boulder 2090**  
Studies of the solar mesosphere explorer: Dynamics and horizon sensor performance  
*Period* *Obligations*  
11/30/82-01/15/84 FY83: \$64,679 TOTAL: \$64,679  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lawrence, G. M. GSFC/Stengle, T. H. 42-Astro Engr  
Cowley, J. R. GSFC/Working, R. D.

**NAS 5-27370 University of Colorado - Boulder 2091**  
Modelling of tectonophysical distortion from measurement of long-baseline geodetic data and other geophysical parameters  
*Period* *Obligations*  
09/28/82-09/28/84 FY83: \$30,000 TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Whitcomb, J. H. GSFC/Mead, G. D. 32-Geological Sci

**NAS 5-27644 University of Colorado - Boulder 2092**  
Research investigation entitled studies of polar motion, Earth rotation and plate motion CD-73  
*Period* *Obligations*  
05/17/83-09/20/84 FY83: \$69,000 TOTAL: \$69,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Morgan, W. J. GSFC/Mead, G. D. 32-Geological Sci  
Wahr, J. M.

**NAS 5-27671 University of Colorado - Boulder 2093**  
Constraints on geomagnetic secular variation modeling from electromagnetism and fluid dynamics of Earth's core  
*Period* *Obligations*  
05/18/83-06/17/84 FY83: \$34,306 TOTAL: \$34,306  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Unavailable GSFC/Kouns, C. W. 32-Geological Sci  
GSFC/Langel, R. A.

**NAS 5-27750 University of Colorado - Boulder 2094**  
Solar stellar irradiance comparison experiment (solstice) for UARS  
*Period* *Obligations*  
10/01/83-02/01/88 FY83: \$195,336 TOTAL: \$195,336  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rottman, G. GSFC/Browne, W. 31-Atmos Sci  
GSFC/Donley, J.

# **NASA'S UNIVERSITY PROGRAM** **COLORADO (Continued)**

**NAS 8-31958 University of Colorado - Boulder 2095**  
Study of geophysical fluid dynamics with electro-hydrodynamics polarization forces

Period	Obligations	
03/26/76-11/30/85	FY83: \$104,000 TOTAL: \$559,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hart, J. E.	MSFC/Jones, C. T.	31-Atmos Sci
Toomre, J.	MSFC/Fichtl, G. H.	

**NASW 3569 University of Colorado - Boulder 2096**  
Support of balloon-borne ultraviolet stellar spectrograph

Period	Obligations	
12/02/81-12/01/83	FY83: \$20,000 TOTAL: \$105,353	
Prin. Invest.	NASA Tech. Officer	CASE Category
Timothy, J. G.	HQ-EZ/Weiler, E. J.	11-Astronomy
	HQ-EZ/Bogges, N. W.	

**NASW 3711 University of Colorado - Boulder 2097**  
Low cost end to end satellite data system

Period	Obligations	
03/18/83-03/17/84	FY83: \$34,215 TOTAL: \$34,215	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hansen, E.	HQ-EI/Villasenor, A. J.	
Davis, R.		22-Computer Science

**NASW 3730 University of Colorado - Boulder 2098**  
Development of an SEM operational interface to the TDRSS network

Period	Obligations	
04/30/83-12/30/83	FY83: \$176,578 TOTAL: \$176,578	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hansen, E. L.	HQ-EE/Esenwein, G. F.	
		29-Math/Computer, NEC
	HQ-EZ/Weinreb, M. B.	

**NCA 2-170201 University of Colorado - Boulder 2099**  
Chromatographic columns for separation and analysis of constituents of planetary atmospheres

Period	Obligations	
01/01/82-12/31/83	FY83: \$18,000 TOTAL: \$38,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Sievers, R. E.	ARC/Pollock, G. E.	12-Chemistry

**NCA 2-170202 University of Colorado - Boulder 2100**  
Design of three dimensional aerodynamic configuration using numerical optimization procedures

Period	Obligations	
06/01/82-05/31/84	FY83: \$22,400 TOTAL: \$38,300	
Prin. Invest.	NASA Tech. Officer	CASE Category
Chow, C. Y.	ARC/Holst, T. L.	41-Aero Engr
	ARC/Hicks, R. M.	

**NCA 2-170301 University of Colorado - Boulder 2101**  
Angular momentum transfer by magnetic torques in the solar nebula

Period	Obligations	
03/01/83-02/29/84	FY83: \$4,800 TOTAL: \$4,800	
Prin. Invest.	NASA Tech. Officer	CASE Category
Zweibel, E.	ARC/Cassen, P.	11-Astronomy
	ARC/Barnes, A.	

**NCA 2-170302 University of Colorado - Boulder 2102**  
Development of an efficient pressure solution methodology for incompressible Navier-Stokes equation

Period	Obligations	
06/01/83-05/31/85	FY83: \$39,160 TOTAL: \$39,160	
Prin. Invest.	NASA Tech. Officer	CASE Category
Chow, C. Y.	ARC/Kwak, D.	41-Aero Engr

**NCA 2-170303 University of Colorado - Boulder 2103**  
A LANDSAT land cover classification of the sagavanirktok quadrangle, Alaska

Period	Obligations	
08/01/83-06/30/84	FY83: \$15,670 TOTAL: \$15,670	
Prin. Invest.	NASA Tech. Officer	CASE Category
Walker, D. A.	ARC/Gaydos, L.	32-Geological Sci

**NGL 06-003-052 University of Colorado - Boulder 2104**  
Theoretical and experimental research program in physics of planetary atmospheres

Period	Obligations	
06/28/66-12/31/83	FY83: TOTAL: \$4,794,457	
Prin. Invest.	NASA Tech. Officer	CASE Category
Barth, C. A.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NGL 06-003-057 University of Colorado - Boulder 2105**  
Basic research in solar physics

Period	Obligations	
09/05/67-10/31/83	FY83: \$80,000 TOTAL: \$1,375,758	
Prin. Invest.	NASA Tech. Officer	CASE Category
Linsky, J. L.	HQ-EZ/Chipman, E.	13-Physics

**NGL 06-003-200 University of Colorado - Boulder 2106**  
Application of space technology to practical problems such as those currently facing the mountain sections of the state of Colorado

Period	Obligations	
07/11/72-08/31/82	FY83: TOTAL: \$825,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Ives, J. D.	HQ-ET/Vitale, J. A.	39-Env Sci, NEC

**NSG 5103 University of Colorado - Boulder 2107**  
Rocket research in the ultraviolet airglow and aurora of planetary atmospheres

Period	Obligations	
02/01/76-03/31/84	FY83: \$225,000 TOTAL: \$1,596,356	
Prin. Invest.	NASA Tech. Officer	CASE Category
Barth, C. A.	GSFC/Early, L. J.	19-Phys Sci, NEC
Hathaway, D. D.	GSFC/Pless, R. H.	

**NSG 5153 University of Colorado - Boulder 2108**  
Research of observed and theoretical variations of atmospheric ozone

Period	Obligations	
01/17/77-03/31/84	FY83: \$88,490 TOTAL: \$527,341	
Prin. Invest.	NASA Tech. Officer	CASE Category
London, J.	GSFC/Frederick, J. E.	31-Atmos Sci
	HQ-EE/Watson, R. T.	

**NASA'S UNIVERSITY PROGRAM  
COLORADO (Continued)**

<b>NSG 5178</b>	<b>University of Colorado - Boulder</b>	<b>2109</b>
<b>Rocket research in solar ultraviolet spectroscopy</b>		
<i>Period</i>	<i>Obligations</i>	
06/01/77-01/09/84	FY83: \$205,065 TOTAL: \$1,094,437	
<i>Prin. Invest</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rottman, G. T.	GSFC/Early, L. J.	13-Physics
	GSFC/Pless, R. H.	

<b>NSG 7291</b>	<b>University of Colorado - Boulder</b>	<b>2116</b>
Research in solar physics with emphasis on empirical non-equilibrium thermodynamics		
<i>Period</i>	<i>Obligations</i>	
09/01/76-12/31/83	FY83:	TOTAL: \$155,333
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thomas, R. N.	HQ-EZ/Chipman, E.	13-Physics

<b>NSG 5300</b>	<b>University of Colorado - Boulder</b>	<b>2110</b>
Research of stellar wind velocity in Alpha Cam using ultraviolet data from the International Ultraviolet Explorer (IUE)		
<i>Period</i>	<i>Obligations</i>	
09/15/78-11/30/83	FY83: \$36,600	TOTAL: \$331,435
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Snow, T. P., Jr.	GSFC/Kondo, Y.	11-Astronomy
Seab. C. G.		

<b>NSG 7459</b>	<b>University of Colorado - Boulder</b>	<b>2117</b>
<b>Development and test of multi-anode microchannel array detector system</b>		
<i>Period</i>	<i>Obligations</i>	
06/01/78-06/30/84	FY83: \$345,000 TOTAL: \$1,741,949	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Timothy, J. G.	HQ-EZ/Weiler, E. J.	11-Astronomy
	HQ-EZ/Boogess, N. W.	

<b>NSG 5303</b>	<b>University of Colorado - Boulder</b>	<b>2111</b>
Ultraviolet measurements with high spectral resolution		
<i>Period</i>	<i>Obligations</i>	
09/15/78-06/14/84	FY83: \$210,049 TOTAL: \$1,250,791	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Snow, T. P., Jr.	GSFC/Early, L. J.	11-Astronomy
McClintock, W. E.	GSFC/Pless, R. H.	
Cash, W. C., Jr.		

<b>NSG 7511</b>	<b>University of Colorado - Boulder</b>	<b>2118</b>
Basic research in solar physics: Energy transport in the solar envelope and atmosphere		
<i>Period</i>	<i>Obligations</i>	
10/01/78-09/30/83	FY83: \$55,000	TOTAL: \$258,576
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gebbie, K. B.	HQ-EZ/Chioman, E. G.	13-Physics

<b>NSG 5318</b>	<b>University of Colorado - Boulder</b>	<b>2112</b>
<b>Superggranulation velocity fields and their relation to magnetically active regions</b>		
<i>Period</i>	<i>Obligations</i>	
01/15/79-02/14/83	FY83:	TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gebbie, K. B.	GSFC/Wende, C.	31-Atmos Sci

NSG 7584	University of Colorado - Boulder	2119
Mechanisms of deformation and failure appropriate to lunar conditions		
<i>Period</i>	<i>Obligations</i>	
05/01/79-02/28/84	FY83: \$93,368	TOTAL: \$428,711
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Spetzler, H. A.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

<b>NSG 7128</b>	<b>University of Colorado - Boulder</b>	<b>2113</b>
Studies of X-ray ultraviolet and optical emission from galactic X-ray sources		
<i>Period</i>	<i>Obligations</i>	
03/01/75-09/30/83	FY83: \$72,000	TOTAL: \$344,990
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCray, R.	HQ-EZ/Kaluzienski, L.	11-Astronomy
Shull, J. M.	HQ-EZ/Opp, A. G.	

NSG 7626	University of Colorado - Boulder	2120
High resolution spectrophotometric observations of interstellar absorption lines		
Period	Obligations	
08/01/79-08/31/84	FY83: \$63,731	TOTAL: \$156,147
Prin. Invest.	NASA Tech. Officer	CASE Category
Snow, T. P.	HQ-EZ/Weiler, E. J.	11-Astronomy
	HQ-EZ/Boocess, N. W.	

<b>NSG 7231</b>	<b>University of Colorado - Boulder</b>	<b>2114</b>
A rocket program to measure minor neutral species in the Earth's atmosphere from 30 km to 110 km		
<i>Period</i>	<i>Obligations</i>	
04/01/76-03/31/83	FY83:	TOTAL: \$593,499
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thomas, R. J.	HQ-EE/Watson, R. T.	31-Atmos Sci
Rusch, D. W.	HQ-EE/Hilsenrath, E.	
Sonders, R. W.		

<b>NSG 7637</b>	<b>University of Colorado - Boulder</b>	<b>2121</b>
<b>Accuracy of gravitational physics tests using ranges to the inner planets</b>		
<i>Period</i>	<i>Obligations</i>	
<b>08/01/79-01/31/82</b>	<b>FY83:</b>	<b>TOTAL: \$36,812</b>
<i>Prim. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
<b>Ashby, N.</b>	<b>HQ-EZ/Weiler, E. J.</b>	<b>11-Astronomy</b>

<b>MSG 7287</b>	<b>University of Colorado - Boulder</b>	<b>2115</b>
<b>Study of the solar corona using radio observation</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/01/76-10/30/83</b>	<b>FY83: \$50,000</b>	<b>TOTAL: \$292,000</b>
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
<b>Dulk, G. A.</b>	<b>HQ-EZ/Chipman, E. G.</b>	<b>13-Physics</b>

<b>NAG 1-56</b>	<b>University of Denver</b>	<b>2122</b>
<b>Solar extinction radiometry</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/15/80-08/14/82</b>	<b>FY83:</b>	<b>TOTAL: \$78,937</b>
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
<b>Goldman, A.</b>	<b>LARC/Goad, J. H.</b>	<b>31-Atmos Sci</b>
<b>Murray, D. G.</b>	<b>LARC/McCormick, M. P.</b>	

<b>NAGW 158</b>	<b>University of Denver</b>	<b>2123</b>
Wave mechanism in space plasma driven by non-Maxwellian distributions		
<i>Period</i>	<i>Obligations</i>	
03/15/81-03/14/84	FY83: \$33,572	TOTAL: \$89,851
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Patel, V. L.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EL/Evans, N.	

<b>NAS 1-16306</b>	<b>University of Denver</b>	<b>2125</b>
Science support for Earth radiation budget satellite/stratospheric aerosol and gas experiment		
<i>Period</i>	<i>Obligations</i>	
08/22/80-08/21/85	FY83:	TOTAL: \$73,819
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Murcay, D. G.	LARC/McMaster, L. R.	31-Atmos Sci
	LARC/McCormick, M. P.	

<b>NAS 2-11186</b>	<b>University of Denver</b>	<b>2126</b>
Measurements of compounds of interest in stratospheric chemistry using infrared techniques		
<i>Period</i>	<i>Obligations</i>	
03/01/82-02/28/85	FY83: \$224,000	TOTAL: \$601,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Murray, D. G.	ARC/Margozzi, A.	31-Atmos Sci

<b>NAS 5-26364</b>	<b>University of Denver</b>	<b>2127</b>
<b>Stratospheric molecular spectra parameter study</b>		
<i>Period</i>	<i>Obligations</i>	
<b>10/17/80-02/16/83</b>	<b>FY83: \$12,000</b>	<b>TOTAL: \$49,000</b>
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
<b>Goldman. A.</b>	<b>GSFC/Kunde, V. G.</b>	<b>39-Env Sci, NEC</b>

<b>NAS 5-26627</b>	<b>University of Denver</b>	<b>2128</b>
Measurement of X-rays in the mesosphere		
<i>Period</i>	<i>Obligations</i>	
07/02/81-01/01/84	FY83: \$24,765	TOTAL: \$61,165
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Barcus, J. R.	GSFC/Goldberg, R. A.	11-Astronomy

<b>NAS 8-34604</b>	<b>University of Denver</b>	<b>2129</b>
Cloud physics experiment simulation crystal growth in a cloud simulation facility		
<i>Period</i>	<i>Obligations</i>	
12/10/81-12/09/83	FY83:	TOTAL: \$60,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Plooster, M. N.	MSFC/Fogle, V.	13-Physics
	MSFC/Williams, J. R.	

<b>NAS 9-15991</b>	<b>University of Denver</b>	<b>2130</b>
Life sciences shuttle instrumentation development		
<i>Period</i>	<i>Obligations</i>	
11/01/79-11/30/82	FY83:	TOTAL: \$394,768
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sturm, R. E.	JSC/Booher, C. R.	59-Life Sci, NEC

<b>NASW 3466</b>	<b>University of Denver</b>	<b>2131</b>
Transfer research impact studies support of NASA's program for transfer research impact studies		
<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/84	FY83: \$444,260	TOTAL: \$1,144,260
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chapman, R.	HQ-LG/Ault, L. A.	99-Multi-Discip
	HQ-LG/Goldberg, S.	

<b>NCC 1-48</b>	<b>University of Denver</b>	<b>2132</b>
Collaborative study of high resolution infrared atmospheric spectra		
<i>Period</i>	<i>Obligations</i>	
12/01/80-11/30/83	FY83: \$25,000	TOTAL: \$59,995
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Goldman, A.	LARC/Seals, R. K., Jr.	31-Atmos Sci
Murcrav, D. G.	LARC/Smith, M. A.	

<b>NSG 1432</b>	<b>University of Denver</b>	<b>2133</b>
Ground based solar spectral studies		
<i>Period</i>	<i>Obligations</i>	
07/11/77-11/10/84	FY83: \$134,961	TOTAL: \$471,637
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Murcay, D. G.	LARC/Seals, R. K., Jr.	39-Env Sci, NEC
	LARC/Smith, M. A.	

NCC 2-41		University of Southern Colorado	2134
Technology research for strapdown inertial experiments			
Period	Obligations		
10/01/79-12/31/83	FY83: \$148,425	TOTAL: \$540,089	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Carestia, R. A.	ARC/Callas, G. P.	42-Astro Engr	

<b>NCC 2-91</b>	<b>University of Southern Colorado</b>	<b>2135</b>
Investigation of distributed microcomputer methods for high authority auto flight systems		
<i>Period</i>	<i>Obligations</i>	
10/01/80-10/31/83	FY83: \$79,558	TOTAL: \$228,617
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dunn, W. R.	ARC/Webster, L. D.	49-Engr, NEC

<b>NSG 9051</b>	<b>University of Southern Colorado</b>	<b>2136</b>
<b>Electron microprobe study of lunar and planetary zoned plagioclase feldspars</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/01/77-03/31/83</b>	<b>FY83:</b>	<b>TOTAL: \$76,529</b>
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
<b>Smith, R. K.</b>	<b>JSC/Lofgren, G.</b>	<b>19-Phys Sci, NEC</b>

# NASA'S UNIVERSITY PROGRAM CONNECTICUT

## CONNECTICUT

**NAG 1-153** **University of Connecticut** **2137**  
An investigation of shape preserving curve and surface approximation with applications

<i>Period</i>	<i>Obligations</i>
03/01/81-08/31/83	FY83: TOTAL: \$54,680
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Roulier, J. A.	LARC/Schiess, J. R.
	29-Math/Cmputer, NEC
	LARC/Shoosmith, J. N.

**NAG 2-213** **University of Connecticut** **2138**  
State-of-the-art in helicopter multi-cyclic control for vibration alleviation

<i>Period</i>	<i>Obligations</i>
11/01/82-11/30/83	FY83: \$81,000 TOTAL: \$81,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Molusis, J.	ARC/Warmbrodt, W.
	41-Aero Engr
	ARC/Johnson, W.

**NAG 3-64** **University of Connecticut** **2139**  
Droplet impact dynamics and heat transfer

<i>Period</i>	<i>Obligations</i>
06/01/80-09/30/83	FY83: TOTAL: \$127,769
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Bowley, W. W.	LERC/Olsen, W.
Rivard, E. E.	41-Aero Engr

**NAG 3-160** **University of Connecticut** **2140**  
Elevated temperature biaxial fatigue

<i>Period</i>	<i>Obligations</i>
02/15/81-10/30/84	FY83: \$45,253 TOTAL: \$162,049
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Jordan, E. H.	LERC/Kaufman, A.
	49-Engr, NEC

**NAG 3-271** **University of Connecticut** **2141**  
Development of novel aligned ferrous superalloys

<i>Period</i>	<i>Obligations</i>
04/15/82-04/13/84	FY83: \$80,892 TOTAL: \$145,921
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Nowotny, H.	LERC/Stephens, J. R.
	47-Materials Engr

**NAG 3-336** **University of Connecticut** **2142**  
Evaluation of solid fluorescent particles for laser velocimetry

<i>Period</i>	<i>Obligations</i>
11/15/82-08/31/84	FY83: \$55,294 TOTAL: \$55,294
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Bennett, J. C.	LERC/Strazisar, A. J.
	41-Aero Engr

**NAG 3-350** **University of Connecticut** **2143**  
Influence of large-scale motion on turbulence transport for confined coaxial jets

<i>Period</i>	<i>Obligations</i>
10/30/82-10/29/84	FY83: \$120,000 TOTAL: \$120,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Bennett, J. C.	LERC/Marek, C. J.
	46-Mech Engr

**NSG 3238** **University of Connecticut** **2144**  
Turbine endwall two-cylinder program

<i>Period</i>	<i>Obligations</i>
01/02/79-12/31/83	FY83: \$49,138 TOTAL: \$193,635
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Langston, L. S.	LERC/Goldman, L. J.
	46-Mech Engr

**NSG 5075** **University of Connecticut** **2145**  
Modelling the terrestrial hydrology of the global atmosphere

<i>Period</i>	<i>Obligations</i>
08/17/75-12/31/83	FY83: TOTAL: \$318,050
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Bock, P.	GSFC/Halem, M.
Lin, J. D.	31-Atmos Sci

**NSG 5346** **University of Connecticut** **2146**  
Hydro-meteorological modeling of soil moisture and interactive moisture transport processes

<i>Period</i>	<i>Obligations</i>
05/01/79-08/31/83	FY83: TOTAL: \$125,432
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Lin, J. D.	GSFC/Halem, M.
Bock, P.	31-Atmos Sci

**NSG 7450** **University of Connecticut** **2147**  
Factors affecting assimilatory nitrate reduction by prokaryotes

<i>Period</i>	<i>Obligations</i>
06/01/78-04/30/82	FY83: TOTAL: \$185,590
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Leadbetter, E. R.	HQ-EB/Devincenzi, D. L.
	51-Biological Sci

**NAG 8-335** **Wesleyan University** **2148**  
Optical and infrared studies of stars in reflection nebulae

<i>Period</i>	<i>Obligations</i>
01/15/80-09/30/81	FY83: TOTAL: \$16,943
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Herbst, W.	MSFC/Odell, C. R.
	11-Astronomy

**NAGW 244** **Wesleyan University** **2149**  
Morphology and evolution of the Valles Marineris wall scarps

<i>Period</i>	<i>Obligations</i>
10/01/81-09/30/83	FY83: TOTAL: \$14,949
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Patton, P. C.	HQ-EL/Boyce, J. M.
	HQ-EL/Holt, H. E.
	32-Geological Sci

**NAG 5-329** **Western Connecticut State College** **2150**  
Survey of Hyades stars and selected late dwarfs

<i>Period</i>	<i>Obligations</i>
06/01/83-11/30/83	FY83: \$7,000 TOTAL: \$7,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Zolcinski, M.	GSFC/Kondo, Y.
Sterp, R.	11-Astronomy
Antiochos, S. K.	

**NASA'S UNIVERSITY PROGRAM  
CONNECTICUT (Continued)**

**NAG 1-37 Yale University 2151**  
Rotational coherent anti-Stokes Raman spectroscopy (CARS) application  
*Period Obligations*  
03/01/80-02/28/83 FY83: TOTAL: \$179,998  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Chang, R. K. LARC/Hoppe, J. C. 13-Physics  
Snow, J. B. LARC/Hunter, W. W.

**NAG 2-15 Yale University 2152**  
Experimental and theoretical study of heteromolecular nucleation of vapors occurring in the atmosphere  
*Period Obligations*  
01/01/80-03/31/83 FY83: TOTAL: \$148,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wegener, P. P. ARC/Toon, O. B. 31-Atmos Sci

**NAG 3-201 Yale University 2153**  
Theory of mass transfer from combustion gases  
*Period Obligations*  
09/01/81-08/29/84 FY83: \$60,000 TOTAL: \$160,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Rosner, D. E. LERC/Kohl, F. J. 43-Chem Engr  
LERC/Benford, S. M.

**NAG 5-188 Yale University 2154**  
Ultraviolet energy distribution of selected galaxies  
*Period Obligations*  
06/15/81-10/14/82 FY83: TOTAL: \$1,669  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Oemler, A. GSFC/Boggess, A. 11-Astronomy  
Gunn, J. E.

**NAG 5-330 Yale University 2155**  
Research relative to the integrated spectra of globular clusters  
*Period Obligations*  
07/01/83-06/30/84 FY83: \$3,358 TOTAL: \$3,358  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Zinn, H. GSFC/Kondo, Y. 11-Astronomy

**NAGW 175 Yale University 2156**  
Early differentiation of the Moon: Experimental modeling studies  
*Period Obligations*  
02/01/81-02/28/84 FY83: \$48,217 TOTAL: \$157,601  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Longhi, J. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 251 Yale University 2157**  
Theoretical studies on prebiotic conditions  
*Period Obligations*  
09/15/81-09/14/84 FY83: TOTAL: \$25,801  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Morowitz, H. J. HQ-EB/Devincenzi, D. L. 12-Chemistry

**NAS 8-34383 Yale University 2158**  
Containerless high temperature property measurements by atomic fluorescence  
*Period Obligations*  
06/10/81-06/09/84 FY83: \$73,262 TOTAL: \$271,262  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Nordine, P. C. MSFC/Fallon, R. A. 19-Phys Sci, NEC  
Walker, C. A. MSFC/Ethridge, E. S.  
Schiffman, R. A.

**NAS 8-34903 Yale University 2159**  
Satellite data application to baroclinic wave structure  
*Period Obligations*  
07/29/82-07/28/85 FY83: \$69,133 TOTAL: \$133,376  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Saltzman, B. MSFC/Fichel, B. G. 31-Atmos Sci  
Tang, G. M. MSFC/Kaufman, J. I.

**NSG 2185 Yale University 2160**  
Early detection of acute respiratory infections  
*Period Obligations*  
10/01/76-05/31/83 FY83: TOTAL: \$255,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Evans, A. S. ARC/Mandel, A. D. 56-Medical Sciences  
Niederman, J. C.

**NSG 3107 Yale University 2161**  
Deposition of condensible impurities on surfaces immersed in hot gases  
*Period Obligations*  
07/15/76-07/14/82 FY83: TOTAL: \$157,140  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Rosner, D. E. LERC/Kohl, F. J. 47-Materials Engr  
LERC/Stearns, C. A.

**NSG 3169 Yale University 2162**  
Experimentation studies of the formation/ deposition of sodium sulfate in/from combustion gases  
*Period Obligations*  
11/15/77-08/31/83 FY83: TOTAL: \$214,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Rosner, D. E. LERC/Kohl, F. J. 12-Chemistry  
LERC/Stearns, C. A.

**NSG 7290 Yale University 2163**  
Membranes and circadian rhythms in plants  
*Period Obligations*  
10/01/76-11/30/83 FY83: \$54,000 TOTAL: \$365,790  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Galston, A. W. HQ-EB/Halstead, T. W. 51-Biological Sci

**DELAWARE**

**NAG 1-281 University of Delaware 2164**  
Mechanically fastened joints in woven fabric composites  
*Period Obligations*  
06/01/82-10/31/83 FY83: TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Pipes, R. B. LARC/Dow, M. B. 41-Aero Engr  
LARC/Howell, W. E.



# **NASA'S UNIVERSITY PROGRAM** **DELAWARE (Continued)**

**NAG 1-378**                      **University of Delaware**                      **2165**  
Influence of constituent properties and geometric form on  
behavior of woven fabric reinforced composites  
*Period*                      *Obligations*  
06/01/83-05/31/84                      FY83: \$49,999                      TOTAL: \$49,999  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Pipes, R. B.                      ARC/Dexter, H. B.                      47-Materials Engr  
Wilson, D. W.                      ARC/Deaton, J. W.

**NAG 3-321**                      **University of Delaware**                      **2166**  
Design rules for a 100X maximum efficiency GaAs concentrator  
solar cell for space applications  
*Period*                      *Obligations*  
08/09/82-11/09/82                      FY83:                      TOTAL: \$12,005  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Barnett, A. M.                      LERC/Weinberg, I.                      45-Elec Engr  
LERC/Flood, D.

**NAG 3-422**                      **University of Delaware**                      **2167**  
Advanced concepts for high efficiency GaAs concentrator solar  
cells for space applications  
*Period*                      *Obligations*  
04/25/83-04/24/84                      FY83: \$24,027                      TOTAL: \$24,027  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Barnett, A. M.                      LERC/Flood, D. J.                      45-Elec Engr  
LERC/Curtis, H. B.

**NAG 5-107**                      **University of Delaware**                      **2168**  
Research relative to a climatically-derived global soil moisture  
data set  
*Period*                      *Obligations*  
09/15/80-07/31/83                      FY83:                      TOTAL: \$136,233  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Willmott, C. J.                      GSFC/Shukla, J.                      31-Atmos Sci

**NAG 5-348**                      **University of Delaware**                      **2169**  
A study of carbon and silicon in selected white dwarfs  
*Period*                      *Obligations*  
07/15/83-07/14/84                      FY83: \$7,134                      TOTAL: \$7,134  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Shipman, H. L.                      GSFC/Kondo, Y.                      11-Astronomy

**NAG 8-390**                      **University of Delaware**                      **2170**  
Spectra of white dwarf X-ray sources  
*Period*                      *Obligations*  
12/04/80-12/03/81                      FY83:                      TOTAL: \$5,299  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Shipman, H. L.                      MSFC/Stone, J. F.                      11-Astronomy

**NAGW 374**                      **University of Delaware**                      **2171**  
Remote sensing investigations of wetland biomass and productiv-  
ity for global biosystems research  
*Period*                      *Obligations*  
12/01/82-11/30/83                      FY83: \$61,000                      TOTAL: \$61,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Klenas, V.                      HQ-EB/Rambler, M. B.                      51-Biological Sci  
HQ-EB/Devincenzi, D. L.

**NAS 5-26273**                      **University of Delaware**                      **2172**  
Investigation of the stability of naturally occurring glasses  
*Period*                      *Obligations*  
09/01/80-09/27/83                      FY83:                      TOTAL: \$47,868  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Glass, W. P.                      GSFC/Alterescu, S.                      43-Chem Engr  
GSFC/O'keefe, J. A.

**NAS 5-26915**                      **University of Delaware**                      **2173**  
Improvement, construction and calibration of the Wallops wave  
height probe  
*Period*                      *Obligations*  
04/01/82-12/31/82                      FY83:                      TOTAL: \$9,517  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Klemas, V.                      GSFC/Huang, N. E.                      33-Oceanography  
Zheng, Q.                      GSFC/Long, S. R.

**NAS 5-27560**                      **University of Delaware**                      **2174**  
Evaluation of spatial, radiometric and spectral thematic mapper  
performance for coastal studies  
*Period*                      *Obligations*  
03/31/83-01/30/85                      FY83: \$36,000                      TOTAL: \$36,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Klemas, V.                      GSFC/Oseroff, H.                      39-Env Sci, NEC

**NCC 1-81**                      **University of Delaware**                      **2175**  
Spectral radiance measurements of tidal wetlands for ecological  
assessment by remote sensing  
*Period*                      *Obligations*  
09/01/83-08/31/84                      FY83: \$10,000                      TOTAL: \$10,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Klemas, V.                      LARC/Bartlett, D. S.                      39-Env Sci, NEC  
LARC/Johnson, R. W.

**NGT 08-001-800**                      **University of Delaware**                      **2176**  
Graduate student researchers program  
*Period*                      *Obligations*  
09/01/81-04/30/83                      FY83: \$285                      TOTAL: \$11,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Wu, J.                      HQ-LB/Owens, F.                      39-Env Sci, NEC

**NSG 1304**                      **University of Delaware**                      **2177**  
Damage repair technology in composite materials  
*Period*                      *Obligations*  
05/01/76-08/31/82                      FY83:                      TOTAL: \$378,803  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Pipes, R. B.                      LARC/Deaton, J. W.                      46-Mech Engr  
LARC/Dow, M. B.

## **DISTRICT OF COLUMBIA**

**NAG 5-296**                      **The Catholic University of America**                      **2178**  
The sharp lined features in the ultraviolet spectra of hot white  
dwarfs  
*Period*                      *Obligations*  
02/15/83-08/14/84                      FY83: \$54,207                      TOTAL: \$54,207  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Bruhweiler, F. C.                      GSFC/Kondo, Y.                      11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
DISTRICT OF COLUMBIA (Continued)**

**NAG 5-311 The Catholic University of America 2179**  
Query decomposition of multiple queries

Period	Obligations
04/15/83-04/14/84	FY83: \$27,934 TOTAL: \$27,934
Prin. Invest.	NASA Tech. Officer CASE Category
Welch, J. N.	GSFC/Smith, P. H. 22-Computer Science
	GSFC/Berbert, J. H.

**NAS 5-27343 The Catholic University of America 2180**  
Study of high frequency sterling cycle compressor, for dynamic balancing

Period	Obligations
08/03/82-09/01/83	FY83: TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer CASE Category
Deshpande, M. D.	GSFC/Studer, P. A. 49-Engr, NEC
	GSFC/Wilson, M. W.

**NGT 09-005-800 The Catholic University of America 2181**  
Graduate student researchers program

Period	Obligations
09/01/80-08/30/82	FY83: TOTAL: \$18,480
Prin. Invest.	NASA Tech. Officer CASE Category
Werntz, C. W.	HQ-LB/Carter, C. H. 13-Physics

**NSG 5066 The Catholic University of America 2182**  
Research of solar hard X-rays and gamma-rays

Period	Obligations
05/01/75-04/30/84	FY83: \$77,002 TOTAL: \$280,577
Prin. Invest.	NASA Tech. Officer CASE Category
Werntz, C. W.	GSFC/Trombka, J. I. 11-Astronomy
	GSFC/Schmadebeck, R. L.

**NSG 5173 The Catholic University of America 2183**  
Atom-molecule reactions of chemical importance in the strato - sphere

Period	Obligations
06/01/77-02/29/84	FY83: \$21,807 TOTAL: \$248,487
Prin. Invest.	NASA Tech. Officer CASE Category
Hunt, J. B.	GSFC/Navas, D. F. 12-Chemistry
Michael, J. V.	

**NSG 7422 The Catholic University of America 2184**  
Expansion of the solar wind from coronal holes

Period	Obligations
04/01/78-09/30/83	FY83: TOTAL: \$221,000
Prin. Invest.	NASA Tech. Officer CASE Category
Whang, Y. C.	HQ-EZ/Chipman, E. 13-Physics

**NAG 1-13 George Washington University 2185**  
Program of research in helicopter aerodynamic theory

Period	Obligations
12/01/79-03/31/82	FY83: TOTAL: \$53,885
Prin. Invest.	NASA Tech. Officer CASE Category
Liebowitz, H.	LARC/Demarais, R. N. 41-Aero Engr
Runyan, H. L.	

**NAG 1-136 George Washington University 2186**  
Program of research in high-speed aerodynamics in the Joint Institute for Advancement of Flight Sciences

Period	Obligations
12/09/80-12/08/83	FY83: \$38,957 TOTAL: \$113,538
Prin. Invest.	NASA Tech. Officer CASE Category
Liebowitz, H.	LARC/Jones, R. A. 41-Aero Engr

**NAG 1-158 George Washington University 2187**  
Effects of low velocity impact on strength characteristics of composite materials laminates

Period	Obligations
03/01/81-10/31/83	FY83: TOTAL: \$156,729
Prin. Invest.	NASA Tech. Officer CASE Category
Liebowitz, H.	LARC/Prior, E. J. 47-Materials Engr
	LARC/Eiber, W.

**NAG 1-179 George Washington University 2188**  
Software reliability models for fault-tolerant avionics computers and related topics

Period	Obligations
07/01/81-02/29/84	FY83: \$80,000 TOTAL: \$179,905
Prin. Invest.	NASA Tech. Officer CASE Category
Miller, D. R.	LARC/Migneault, G. E.
	LARC/Finelli, G. B. 22-Computer Science

**NAG 1-185 George Washington University 2189**  
Raster graphics extension to the CORE system

Period	Obligations
05/01/81-01/31/84	FY83: \$57,915 TOTAL: \$100,471
Prin. Invest.	NASA Tech. Officer CASE Category
Foley, J. D.	LARC/Speray, D. E.
	22-Computer Science
	LARC/Shoosmith, J. N.

**NAG 1-199 George Washington University 2190**  
Research program in active control/aeroelasticity

Period	Obligations
08/01/81-10/31/84	FY83: \$70,331 TOTAL: \$166,171
Prin. Invest.	NASA Tech. Officer CASE Category
Liebowitz, H.	LARC/Gardner, J. E. 41-Aero Engr

**NAG 1-325 George Washington University 2191**  
Suppression of Marangoni convection in float zones

Period	Obligations
01/19/83-01/18/84	FY83: \$68,770 TOTAL: \$68,770
Prin. Invest.	NASA Tech. Officer CASE Category
Dressler, R. F.	LARC/Crouch, R. K. 19-Phys Sci, NEC
Yevjevich, V.	LARC/Fripp, A. L.

**NAG 2-40 George Washington University 2192**  
Transonic airfoil-design by optimization methods in the Joint Institute for Advancement of Flight Sciences at NASA/Langley Research Center

Period	Obligations
06/01/80-05/31/82	FY83: TOTAL: \$3,027
Prin. Invest.	NASA Tech. Officer CASE Category
Hafez, M. M.	ARC/Chapman, G. T. 41-Aero Engr
	ARC/Hicks, R. M.

<b>NAG 5-83</b>	<b>George Washington University</b>	<b>2193</b>
Application of discrete random media techniques for active and passive modeling of subsurface media		
<i>Period</i>	<i>Obligations</i>	
07/01/80-06/30/82	FY83:	TOTAL: \$65,003
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lang, R. H.	GSFC/Meneghini, R.	45-Elec Engr

NAG 5-265		George Washington University	2194
Discrete random media techniques for microwave modeling of vegetated terrain			
<i>Period</i>		<i>Obligations</i>	
08/15/82-08/31/84		FY83: \$103,000	TOTAL: \$133,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lang, R. H.	GSFC/Choudhury, B.	55-Agriculture Sci	

<b>NAS 1-14605</b>		<b>George Washington University</b>	<b>2195</b>
Experimental and analytical engineering and applied science support of Langley Research Center programs			
<i>Period</i>	<i>Obligations</i>		
09/02/76-09/01/84	FY83: \$44,548	TOTAL: \$311,230	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Liebowitz, H.	LARC/Duberg, J. E.	41-Aero Engr	
Whitesides, J. L.	LARC/Erickson, W. D.		

<b>NAS 5-26797</b>	<b>George Washington University</b>	<b>2196</b>
Conduct research in graphical display of N-dimensional data		
<i>Period</i>	<i>Obligations</i>	
11/03/81-01/31/83	FY83: \$18,094	TOTAL: \$118,023
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sibert, J. L.	GSFC/Truszkowski, W. F.	
Foley, J. D.	22-Computer Science	

<b>NAS 5-27273</b>		<b>George Washington University</b>	<b>2197</b>
A study of computer networks			
<i>Period</i>		<i>Obligations</i>	
06/14/82-10/31/83	FY83:		TOTAL: \$51,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lee, T. N.	GSFC/Ondrus, P. J.	45-Elec Engr	

NCC 1-24		George Washington University	2204
Programs of research in flight sciences			
Period	Obligations		
08/15/79-01/31/84	FY83: \$59,928	TOTAL: \$509,717	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Hesselink, L.	LARC/Foughner, J. T., Jr.	41-Aero Engr	
Whitesides, J. L.			

<b>NAS 5-27585</b>	<b>George Washington University</b>	<b>2198</b>
Human factors analysis and modeling of man/ system interfaces and interactions and applied human factors analysis		
<i>Period</i>	<i>Obligations</i>	
02/25/83-02/24/85	FY83: \$208,000	TOTAL: \$208,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sibert, J. L.	GSFC/Truszkowski, W. F.	
	22-Computer Science	

NCC 1-29		George Washington University	2205
Research program in flight dynamics in the Joint Institute for Advancement of Flight Sciences (JIAFS) at the NASA Langley Research Center			
Period	Obligations		
12/01/79-11/30/83	FY83: \$82,370	TOTAL: \$310,456	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Liebowitz, H.	LARC/Suit, W. T.	41-Aero Engr	
	LARC/Lallman, F. J.		

<b>NAS 9-16461</b>	<b>George Washington University</b>	<b>2199</b>
Assessing space station studies as related to national needs		
<i>Period</i>		<i>Obligations</i>
09/24/81-12/01/82	FY83:	TOTAL: \$18,276
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Logsdon, J.	JSC/Wolfer, B.	49-Engr. NEC

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**NASA'S UNIVERSITY PROGRAM  
DISTRICT OF COLUMBIA (Continued)**

**NCC 1-39** **George Washington University** **2207**  
Program of research in environmental modeling  
*Period* *Obligations*  
04/01/80-08/31/83 FY83: TOTAL: \$110,899  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Liebowitz, H. LARC/Callis, L. B. 31-Atmos Sci  
LARC/Tolson, R. H.

**NCC 1-44** **George Washington University** **2208**  
Research program in aeronautics  
*Period* *Obligations*  
08/01/80-07/31/84 FY83: TOTAL: \$255,212  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Liebowitz, H. L. LARC/Prior, E. J. 41-Aero Engr  
Whitesides, J. L. LARC/Hohl, F.

**NCC 1-47** **George Washington University** **2209**  
A core program in the Joint Institute for Advancement of Flight Sciences at the NASA Langley Research Center  
*Period* *Obligations*  
11/04/80-11/03/83 FY83: \$304,720 TOTAL: \$666,492  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Liebowitz, H. LARC/Hohl, F. 41-Aero Engr  
LARC/Prior, E. J.

**NGR 09-010-078** **George Washington University** **2210**  
Research programs in structures and dynamics  
*Period* *Obligations*  
01/06/72-12/31/84 FY83: \$241,802 TOTAL: \$2,105,459  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Liebowitz, H. LARC/McComb, H. G., Jr. 41-Aero Engr  
LARC/Hanks, B. R.

**NGR 09-010-085** **George Washington University** **2211**  
Aircraft noise reduction research  
*Period* *Obligations*  
02/21/73-06/30/84 FY83: TOTAL: \$690,128  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Liebowitz, H. LARC/Morgan, H. G. 41-Aero Engr

**NGT 09-010-800** **George Washington University** **2212**  
Graduate student researchers program  
*Period* *Obligations*  
05/03/81-05/02/84 FY83: \$12,590 TOTAL: \$33,713  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Silverman, B. G. HQ-LB/Owens, F. C. 49-Engr, NEC

**NSG 1110** **George Washington University** **2213**  
Antenna and wave propagation applied to avionics systems  
*Period* *Obligations*  
10/01/74-05/31/82 FY83: TOTAL: \$171,511  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Liebowitz, H. LARC/Bailey, M. C. 45-Elec Engr

**NSG 1161** **George Washington University** **2214**  
Research in flight dynamics  
*Period* *Obligations*  
06/01/75-10/31/83 FY83: TOTAL: \$169,632  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Liebowitz, H. LARC/Suit, W. T. 41-Aero Engr  
LARC/Queijc, M. J.

**NSG 1555** **George Washington University** **2215**  
Studies of radiative transfer in the Earth's atmosphere with emphasis on the inference of the radiation budget  
*Period* *Obligations*  
08/01/78-07/31/84 FY83: TOTAL: \$64,931  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Liebowitz, H. LARC/Smith, G. L. 31-Atmos Sci  
Barkstrom, B. R. LARC/Suttles, J. T.

**NSG 1585** **George Washington University** **2216**  
Research program in laminar flow control  
*Period* *Obligations*  
11/15/78-06/30/83 FY83: \$49,160 TOTAL: \$322,607  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Liebowitz, H. LARC/Harvey, W. D. 41-Aero Engr  
Pfenninger, W. LARC/Wagner, R. D.

**NSG 5109** **George Washington University** **2217**  
Decoding and performance of error correcting codes  
*Period* *Obligations*  
07/16/76-10/31/84 FY83: TOTAL: \$238,986  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Helgert, H. J. GSFC/Morakis, J. C. 49-Engr, NEC  
GSFC/Miller, W. H.

**NASW 3397** **Georgetown University** **2218**  
Guide for the teaching and student research of the applications of shuttle derived space utilization technologies  
*Period* *Obligations*  
06/11/80-03/31/82 FY83: TOTAL: \$29,996  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Cheston, T. S. HQ-LC/Nixon, W. D. 79-Soc Sci, NEC  
HQ-MT/Puttkamer, J. V.

**NAG 1-130** **Howard University** **2219**  
Integration of very high frequency omni range station/distance measuring equipment  
*Period* *Obligations*  
12/01/80-11/30/83 FY83: TOTAL: \$6,328  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Choudhury, A. K. LARC/Taylor, L. W. 41-Aero Engr

**NAG 1-290** **Howard University** **2220**  
Megamechanics research consortium  
*Period* *Obligations*  
07/12/82-09/30/83 FY83: TOTAL: \$149,692  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Broome, T. H., Jr. LARC/Housner, J. M. 49-Engr, NEC

**NAG 1-383** **Howard University** **2221**  
Howard university large space structures institute  
*Period* *Obligations*  
07/11/83-07/10/84 FY83: \$537,500 TOTAL: \$537,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Broome, T. H. LARC/Housner, J. M. 46-Mech Engr  
Bainum, P. M. LARC/Juang, J.  
Reiss, R.

**NASA'S UNIVERSITY PROGRAM  
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**NAG 2-78 Howard University 2222**  
Far infrared observations of extragalactic molecular clouds  
*Period Obligations*  
10/01/80-09/30/84 FY83: TOTAL: \$17,663  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Richard, L. J. ARC/Haughney, L. C. 11-Astronomy

**NAG 2-250 Howard University 2223**  
Neurohumoral and mechanical factors in the modulation of left ventricular mass  
*Period Obligations*  
09/23/83-09/22/84 FY83: \$123,653 TOTAL: \$123,653  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hawthorne, E. W. ARC/Sandler, H. 59-Life Sci, NEC

**NAG 3-228 Howard University 2224**  
Microwave GaAs field effect transistor and pin diode switches  
*Period Obligations*  
11/25/81-11/24/82 FY83: TOTAL: \$34,120  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wang, Y. C. LERC/Downey, A. N. 45-Elec Engr

**NAG 3-431 Howard University 2225**  
Development of epitaxial cubic silicon carbide  
*Period Obligations*  
05/25/83-05/24/84 FY83: \$264,017 TOTAL: \$264,017  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Spencer, M. G. LERC/Powell, J. A. 13-Physics  
Harris, G. L.

**NAG 5-17 Howard University 2226**  
Two photon excitation as a tool for atmospheric and kinetic investigation  
*Period Obligations*  
03/01/80-07/31/83 FY83: TOTAL: \$145,958  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Halpern, J. B. GSFC/Miller, G. E. 13-Physics

**NAG 5-25 Howard University 2227**  
Dynamic characteristics of linear hydrostatic gas bearings  
*Period Obligations*  
04/01/80-07/31/82 FY83: TOTAL: \$67,670  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Watkins, C. B. GSFC/Cygnarowicz, T. A. 46-Mech Engr  
Eronini, I. E. GSFC/Sherman, A.

**NAG 5-79 Howard University 2228**  
Research relative to optical constants and properties of material in the extreme ultraviolet  
*Period Obligations*  
06/15/80-09/30/84 FY83: \$158,812 TOTAL: \$225,060  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Catchings, R. M. GSFC/Osantowski, J. F. 13-Physics  
GSFC/Mangus, J. D.

**NAG 5-156 Howard University 2229**  
Real-time observations of X-ray diffraction patterns  
*Period Obligations*  
07/01/81-10/31/83 FY83: TOTAL: \$43,625  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Tsang, T. GSFC/Yin, L. I. 13-Physics

**NAG 5-204 Howard University 2230**  
Investigation of mechanisms by which laser dye lifetimes may be extended  
*Period Obligations*  
08/15/81-02/14/84 FY83: TOTAL: \$98,137  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Nicholson, J. M. GSFC/Dickens, P. L. 12-Chemistry  
GSFC/Caudill, L. O.

**NAG 5-224 Howard University 2231**  
Snow cover snowmelt and runoff in the Himalogan River basins  
*Period Obligations*  
03/15/82-03/14/84 FY83: \$79,284 TOTAL: \$150,084  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Day, B. GSFC/Hall, D. 39-Env Sci, NEC  
Goswami, D.

**NAG 5-246 Howard University 2232**  
Communications and gigabit logic systems at millimeter wave frequencies  
*Period Obligations*  
08/15/82-11/14/84 FY83: \$302,475 TOTAL: \$602,475  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Spencer, M. G. GSFC/Alcorn, G. E. 44-Civil Engr  
Harris, G.

**NAG 8-395 Howard University 2233**  
X-ray observations of SA galaxies  
*Period Obligations*  
07/01/81-06/30/82 FY83: TOTAL: \$5,301  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kumar, C. K. MSFC/Stone, J. F. 11-Astronomy

**NAGW 446 Howard University 2234**  
An integrated laboratory and observational study of the inner coma of Halley's comet  
*Period Obligations*  
06/01/83-05/31/84 FY83: \$187,140 TOTAL: \$187,140  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Jackson, W. M. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-U/Pohly, J. G.

**NAS 5-23799 Howard University 2235**  
Quality assurance system in clinical practice settings  
*Period Obligations*  
12/07/76-11/30/83 FY83: TOTAL: \$142,791  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Chang, P. GSFC/Alterescu, S. 56-Medical Sciences

**NAS 5-24242 Howard University 2236**  
Study of aerodynamics for sounding rockets  
*Period Obligations*  
07/01/77-09/01/82 FY83: TOTAL: \$161,561  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Fan, D. GSFC/Barrowman, J. S. 41-Aero Engr  
GSFC/Mayo, E. E.

**NASA'S UNIVERSITY PROGRAM  
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**NAS 5-25185 Howard University 2237**  
Study of tektites and other space related glasses  
*Period Obligations*  
08/17/78-11/30/83 FY83: TOTAL: \$110,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Thorpe, A. M. GSFC/Okeefe, J. A. 39-Env Sci, NEC  
GSFC/Alterescu, S.

**NAS 5-26531 Howard University 2238**  
Microwave circuit design  
*Period Obligations*  
04/15/81-07/30/82 FY83: TOTAL: \$73,949  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Chowdhary, R. GSFC/Chrissotimos, N. 45-Elec Engr

**NCA 5-29 Howard University 2239**  
Goddard introduction to engineering careers  
*Period Obligations*  
06/01/78-07/16/84 FY83: TOTAL: \$60,510  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cox, E. L. GSFC/Mundy, J. R. 49-Engr, NEC  
GSFC/Chapman, J. W.

**NCC 5-25 Howard University 2240**  
A simulation network for electrical engineering  
*Period Obligations*  
10/01/82-09/30/85 FY83: \$160,000 TOTAL: \$160,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Deloatch, E. M. GSFC/Truskowski, W. F. 45-Elec Engr  
Bradley, T.  
Neal, W.

**NGT 09-011-060 Howard University 2241**  
Summer faculty fellowship program in research  
*Period Obligations*  
01/01/78-03/31/84 FY83: TOTAL: \$574,858  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Fan, D. N. HQ-LB/Owens, F. C. 99-Multi-Discip

**NGT 09-011-800 Howard University 2242**  
Graduate student researchers program  
*Period Obligations*  
08/03/81-08/02/84 FY83: \$10,000 TOTAL: \$26,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Jackson, W. HQ-LB/Owens, F. C. 13-Physics

**NGT 09-011-801 Howard University 2243**  
Graduate student researchers program  
*Period Obligations*  
08/19/81-08/18/84 FY83: \$10,000 TOTAL: \$26,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Harris, G. L. HQ-LB/Owens, F. C. 45-Elec Engr

**NSG 1414 Howard University 2244**  
The dynamics and control of large flexible space structures  
*Period Obligations*  
05/16/77-02/15/84 FY83: \$81,902 TOTAL: \$447,722  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bainum, P. M. LARC/Hammer, H. A. 49-Engr, NEC  
Kumar, V. K.  
Reddy, A. S.

**NSG 5071 Howard University 2245**  
Laser induced photoluminescence studies of primary photochemical production processes of cometary radicals  
*Period Obligations*  
08/01/75-03/31/84 FY83: \$65,000 TOTAL: \$491,625  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Jackson, W. M. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NSG 5158 Howard University 2246**  
Research of microwave semiconductor devices  
*Period Obligations*  
02/01/77-06/14/82 FY83: TOTAL: \$739,612  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Harris, G. L. GSFC/Alcorn, G. E. 13-Physics  
Spencer, M.  
Chowdhary, R.

**NAG 5-91 University of District of Columbia 2247**  
Data management and language enhancement for generalized set theory computer  
*Period Obligations*  
08/01/80-09/30/83 FY83: TOTAL: \$111,410  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Finley, G. T. GSFC/Purves, L. R. 22-Computer Science

**NASW 3689 University of District of Columbia 2248**  
Program in engineering, math, and computer science for academically talented 9th grade students  
*Period Obligations*  
09/15/82-12/31/83 FY83: \$79,742 TOTAL: \$104,865  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Darby, A. J. HQ-U/Warren, L. S. 29-Math/Cmputer, NEC  
Anderson, B. HQ-U/Coleman, M.

**NGR 09-050-019 University of District of Columbia 2249**  
Determination of heavy metals in sediments and benthic species in relation to nuclear power plant operation  
*Period Obligations*  
02/18/74-11/30/82 FY83: TOTAL: \$226,776  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Phelps, H. L. GSFC/Gross, F. C. 39-Env Sci, NEC  
GSFC/Colony, J. A.

**NGR 09-053-003 University of District of Columbia 2250**  
Investigation of problems associated with solid encapsulation of high voltage electronic assemblies  
*Period Obligations*  
04/15/74-01/31/84 FY83: TOTAL: \$278,229  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lessin, I. GSFC/Ruitberg, A. 39-Env Sci, NEC

**NSG 5192 University of District of Columbia 2251**  
Excitation cross section measurements of atmospheric interest  
*Period Obligations*  
08/01/77-08/31/82 FY83: TOTAL: \$211,842  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Morgan, H. D. GSFC/Mentall, J. E. 13-Physics

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**NCC 1-66 Embry-Riddle Aeronautical University 2252**  
Cockpit display of traffic information (CDTI)  
*Period Obligations*  
03/01/82-02/29/84 FY83: \$46,784 TOTAL: \$94,890  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wells, D. C. LARC/Shaugnessy, J. D. 41-Aero Engr  
LARC/Kelly, J. R.

**NAG 2-81 Florida A&M University 2253**  
Relationship of angiotensin rhythms in plasma and CNS to neurogenic hypertension  
*Period Obligations*  
01/01/81-10/31/83 FY83: TOTAL: \$58,113  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Walker, C. A. ARC/Winget, C. M. 51-Biological Sci  
ARC/Deroshia, C. W.

**NAS 5-25165 Florida A&M University 2254**  
Medical application for computer technology  
*Period Obligations*  
08/15/78-09/01/83 FY83: TOTAL: \$97,317  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Fresh, F. A. GSFC/Alterescu, S. 46-Mech Engr

**NSG 2029 Florida A&M University 2255**  
Study of influence of amines on diurnal toxicity of stimulants and depressants  
*Period Obligations*  
07/01/74-10/31/83 FY83: \$65,648 TOTAL: \$474,246  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Walker, C. A. ARC/Winget, C. M. 59-Life Sci, NEC  
ARC/Deroshia, C. W.

**NSG 2183 Florida A&M University 2256**  
Regulation of the adrenal cortex function during stress  
*Period Obligations*  
09/01/76-10/31/83 FY83: \$45,000 TOTAL: \$273,952  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Soliman, K. F. ARC/Winget, C. M. 59-Life Sci, NEC

**NSG 5307 Florida A&M University 2257**  
Electron-impact excitation of molecular nitrogen  
*Period Obligations*  
11/15/78-08/14/84 FY83: \$54,143 TOTAL: \$272,924  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Jones, H. N. GSFC/Temkin, A. 13-Physics  
Weatherford, C. A.

**NAS10-10106 Florida Institute of Technology 2258**  
Improved hyperbolic vapor removal systems study resulting in preliminary design  
*Period Obligations*  
04/24/81-07/24/82 FY83: TOTAL: \$62,695  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Thomas, J. J. KSC/Howard, F. S. 12-Chemistry

**NAG 2-149 Florida State University 2259**  
Biochemical analysis of the anaerobic microbial metabolism and community structure in managed fermentation  
*Period Obligations*  
01/01/82-12/31/83 FY83: \$60,000 TOTAL: \$128,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
White, R. C. ARC/Wydeven, T. 51-Biological Sci

**NAG 3-182 Florida State University 2260**  
Shock associated noise of supersonic jets from convergent-divergent nozzles  
*Period Obligations*  
08/01/81-12/31/84 FY83: TOTAL: \$100,620  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Tam, C. K. LERC/Stone, J. R. 41-Aero Engr

**NAG 5-6 Florida State University 2261**  
Investigation of microwave radiometer data in global numerical weather prediction  
*Period Obligations*  
02/01/80-05/31/82 FY83: TOTAL: \$128,031  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Krishnamurti, T. N. GSFC/Susskind, J. 31-Atmos Sci

**NAG 5-219 Florida State University 2262**  
Coupled ice-ocean dynamics in the marginal ice zone  
*Period Obligations*  
04/01/82-03/31/84 FY83: \$145,870 TOTAL: \$286,484  
*Prin. Invest. NASA Tech. Officer CASE Category*  
O'brien, J. GSFC/Rao, D. B. 33-Oceanography

**NAG 5-332 Florida State University 2263**  
An investigation of the marine boundary layer during cold air outbreak  
*Period Obligations*  
06/15/83-06/14/84 FY83: \$48,816 TOTAL: \$48,816  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Stage, S. A. GSFC/Chou, S. H. 31-Atmos Sci

**NAGW 221 Florida State University 2264**  
Some aspects of southern oscillation dynamics  
*Period Obligations*  
09/01/81-08/31/82 FY83: TOTAL: \$20,944  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Clark, A. J. HQ-EB/Chase, R. P. 33-Oceanography  
HQ-EB/Wilson, W. S.

**NASW 3522 Florida State University 2265**  
Construction of a 0.0025 cm<sup>-1</sup> resolution Fourier transform spectrometer  
*Period Obligations*  
02/01/81-07/01/83 FY83: TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hunt, R. H. HQ-EB/Watson, R. T. 31-Atmos Sci  
Shelton, W. N. HQ-EB/Chan, K. R.

# **NASA'S UNIVERSITY PROGRAM** **FLORIDA (Continued)**

**NGR 10-004-056** **Florida State University** **2266**  
Infrared absorption from 0.8 to 1.5 microns of NH<sub>3</sub>, CH<sub>4</sub> and CO<sub>2</sub>

Period	Obligations
03/25/69-01/31/83	FY83: TOTAL: \$333,086
Prin. Invest.	NASA Tech. Officer
Hunt, R. H.	HQ-EL/Brunk, W. E. CASE Category
	HQ-EL/Murphy, R. E. 11-Astronomy

**NGT 10-004-800** **Florida State University** **2267**  
Graduate student training program in oceanographic remote sensing

Period	Obligations
06/01/81-05/31/84	FY83: \$100,000 TOTAL: \$248,900
Prin. Invest.	NASA Tech. Officer
O'Brien, J. J.	HQ-EE/Thomas, R. H. 33-Oceanography
Mach, W. H.	HQ-EE/Wilson, W. S.

**NSG 7337** **Florida State University** **2268**  
Rock-inhabiting microorganisms from hot and cold deserts: Adaptations to extreme environments

Period	Obligations
03/15/77-04/14/84	FY83: \$104,000 TOTAL: \$584,808
Prin. Invest.	NASA Tech. Officer
Friedmann, E. I.	HQ-EB/Devincenzi, D. L. CASE Category
Friedmann, R. O.	51-Biological Sci

**NSG 7473** **Florida State University** **2269**  
Laboratory determination of infrared absorption line parameters for molecules of importance in upper atmospheric research

Period	Obligations
07/01/78-06/30/84	FY83: \$36,747 TOTAL: \$213,947
Prin. Invest.	NASA Tech. Officer
Hunt, R. H.	HQ-EE/Watson, R. T. CASE Category
	HQ-EE/Kakar, R. K. 31-Atmos Sci

**NSG 7629** **Florida State University** **2270**  
Meteorology studies of Mars

Period	Obligations
03/01/79-10/31/82	FY83: TOTAL: \$99,738
Prin. Invest.	NASA Tech. Officer
Hess, S. L.	HQ-EL/Brinton, H. C. CASE Category
	HQ-EL/Brunk, W. E. 31-Atmos Sci

**NAS 5-26714** **Nova University** **2271**  
Administrative support for satellite surface stress working group

Period	Obligations
09/18/81-12/30/83	FY83: \$90,240 TOTAL: \$179,240
Prin. Invest.	NASA Tech. Officer
Witte, J. M.	GSFC/Kirk, R. G. CASE Category
	33-Oceanography

**NAS10-10280** **The University of Central Florida** **2272**  
Study of OIS developed digital communications

Period	Obligations
10/26/81-12/27/82	FY83: TOTAL: \$80,483
Prin. Invest.	NASA Tech. Officer
Petrasko, B.	KSC/Byrne, F. CASE Category
	45-Elec Engr

**NAS10-10390** **The University of Central Florida** **2273**  
Characterization and evaluation of acid rain at a site remote from KSC

Period	Obligations
04/15/82-04/14/84	FY83: \$2,050 TOTAL: \$3,898
Prin. Invest.	NASA Tech. Officer
Madsen, B. C.	KSC/Knott, W. M. CASE Category
	39-Env Sci, NEC

**NAS10-10588** **The University of Central Florida** **2274**  
Mathematical model for estimating transient pressure surges in a cryogenic liquid-vapor system

Period	Obligations
01/03/83-09/03/83	FY83: \$26,411 TOTAL: \$26,411
Prin. Invest.	NASA Tech. Officer
Hosler, E. R.	KSC/Lin, F. CASE Category
Gunnerson, F. S.	KSC/Walker, S. W. 43-Chem Engr

**NAS10-10686** **The University of Central Florida** **2275**  
Feasibility analysis of high efficiency dehumidifier air conditioner utilizing heat pipes

Period	Obligations
05/19/83-12/19/83	FY83: \$39,869 TOTAL: \$39,869
Prin. Invest.	NASA Tech. Officer
Khattar, M. K.	KSC/Koning, R. CASE Category
	KSC/Boggs, W. H. 46-Mech Engr

**NAS10-10746** **The University of Central Florida** **2276**  
Alternate power sources for wheelchairs

Period	Obligations
07/15/83-10/15/83	FY83: \$10,000 TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer
Anderson, L. A.	KSC/Fedor, O. H. CASE Category
	49-Engr, NEC

**NAG 1-39** **University of Florida** **2277**  
The numerical solution of partial differential equations by the method of lines

Period	Obligations
02/01/80-03/31/84	FY83: \$16,586 TOTAL: \$44,469
Prin. Invest.	NASA Tech. Officer
Edwards, B. H.	LARC/Haigler, G. W. CASE Category
	LARC/Shoosmith, J. N. 21-Mathematics

**NAG 1-135** **University of Florida** **2278**  
Research on solar-pumped liquid lasers

Period	Obligations
01/01/81-09/30/83	FY83: \$65,121 TOTAL: \$234,619
Prin. Invest.	NASA Tech. Officer
Schneider, R. T.	LARC/Deyoung, R. J. CASE Category
Karzweg, U. H.	LARC/Conway, E. J. 13-Physics
Cox, J. D.	

**NAG 1-154** **University of Florida** **2279**  
Ohmic contacts, irradiation effects and thin film growth

Period	Obligations
03/01/81-04/15/83	FY83: TOTAL: \$65,796
Prin. Invest.	NASA Tech. Officer
Holloway, P. H.	LARC/Outlaw, R. A. CASE Category
	LARC/Conway, E. J. 47-Materials Engr



**NASA'S UNIVERSITY PROGRAM**  
**FLORIDA (Continued)**

**NAG 1-178**                      **University of Florida**                      **2280**  
 Identification and properties of molecular systems of potential  
 use in solar-pumped lasers  
*Period*                      *Obligations*  
 05/01/81-08/31/84                      FY83: \$28,711                      TOTAL: \$179,429  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Ohrn, N. Y.                      LARC/Meador, W. E.                      13-Physics  
 Micha, D. A.                      LARC/Conway, E. J.

**NAG 1-245**                      **University of Florida**                      **2281**  
 Sabbatical program in low-speed aerodynamics  
*Period*                      *Obligations*  
 08/01/82-12/31/83                      FY83:                      TOTAL: \$36,701  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Fearn, R. L.                      LARC/Margason, R. J.                      41-Aero Engr

**NAG 1-368**                      **University of Florida**                      **2282**  
 Viscous flows with regions of concentrated vorticity  
*Period*                      *Obligations*  
 05/06/83-09/30/83                      FY83: \$5,150                      TOTAL: \$5,150  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Fearn, R. L.                      LARC/Margason, R. J.                      41-Aero Engr  
    LARC/Liu, C. H.

**NAG 2-234**                      **University of Florida**                      **2283**  
 Cognitive performance, arousal and emotional stress  
*Period*                      *Obligations*  
 09/01/83-08/19/84                      FY83: \$77,879                      TOTAL: \$77,879  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Lang, P. J.                      ARC/Patton, R. M.                      69-Psych, NEC  
 Cuthbert, B. N.

**NAG 3-363**                      **University of Florida**                      **2284**  
 Numerical study of fluid flow, heat transfer and combustion  
 processes inside the combustion chamber of a direct-injection-  
 stratified-charge rotary engine  
*Period*                      *Obligations*  
 01/01/83-12/31/84                      FY83: \$50,000                      TOTAL: \$50,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Shih, T. I.                      LERC/Schock, H. J.                      46-Mech Engr  
    LERC/Willis, E. A.

**NAGW 126**                      **University of Florida**                      **2285**  
 Interplanetary dust:                      Optical and physical properties and  
 dynamics  
*Period*                      *Obligations*  
 10/01/80-09/30/83                      FY83:                      TOTAL: \$91,483  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Weinberg, J. L.                      HQ-EL/Brinton, H. C.                      31-Atmos Sci

**NAGW 196**                      **University of Florida**                      **2286**  
 Analysis of Voyager radio data from Jupiter and Saturn  
*Period*                      *Obligations*  
 05/01/81-05/31/82                      FY83:                      TOTAL: \$40,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Carr, T. D.                      HQ-EL/Brunk, W. E.                      11-Astronomy

**NAGW 320**                      **University of Florida**                      **2287**  
 Analysis of Voyager radio data from Jupiter and Saturn  
*Period*                      *Obligations*  
 06/01/82-05/31/84                      FY83: \$44,000                      TOTAL: \$84,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Carr, T. D.                      HQ-EL/Brunk, W. E.                      31-Atmos Sci  
 Lebo, G. R.                      HQ-EL/Evans, N.

**NAG10-7**                      **University of Florida**                      **2288**  
 Design/test of an on-line biomedical computer library  
*Period*                      *Obligations*  
 07/27/83-01/31/84                      FY83: \$19,800                      TOTAL: \$19,800  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Grimes, R. R.                      KSC/Buchanan, P.                      56-Medical Sciences

**NAS 2-9976**                      **University of Florida**                      **2289**  
 Experiment implementation of a lightning and radio emission  
 detector  
*Period*                      *Obligations*  
 05/31/78-09/30/85                      FY83:                      TOTAL: \$65,600  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Lanzerotti, L. J.                      ARC/Wilhelmi, A. J.                      31-Atmos Sci  
 Uman, M. A.                      ARC/Tischler, E. T.

**NAS 2-11007**                      **University of Florida**                      **2290**  
 Pioneer 10/11 imaging photopolarimeter (IPP) experiment  
 observations of background starlight  
*Period*                      *Obligations*  
 05/18/81-02/29/84                      FY83: \$19,795                      TOTAL: \$58,227  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Weinberg, J. L.                      ARC/Fimmel, R. O.                      11-Astronomy  
    ARC/Prevost, F.

**NAS 5-22908**                      **University of Florida**                      **2291**  
 Nimbus-G experiment team for solar back-scattered ultraviolet  
 and total ozone mapping system  
*Period*                      *Obligations*  
 12/19/75-12/31/84                      FY83: \$6,000                      TOTAL: \$263,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Green, A. E.                      GSFC/Fleigh, A. F.                      49-Engr, NEC

**NAS 5-26383**                      **University of Florida**                      **2292**  
 A shuttle Spacelab induced atmosphere experiment  
*Period*                      *Obligations*  
 11/04/80-10/31/83                      FY83: \$142,330                      TOTAL: \$391,330  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Weinberg, J.                      GSFC/Volpe, F.                      11-Astronomy

**NAS 5-26453**                      **University of Florida**                      **2293**  
 Heat capacity mapping mission (HCMM) data investigation: Use  
 of thermal inertia temperature measurements predict nocturnal  
 cold prone areas in Florida  
*Period*                      *Obligations*  
 03/16/81-03/15/83                      FY83:                      TOTAL: \$42,504  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Allen, L. H.                      GSFC/Oseroff, H.                      31-Atmos Sci  
 Chen, E. Y.  
 Martsolf, J. D.

**NASA'S UNIVERSITY PROGRAM  
FLORIDA (Continued)**

**NASW 3578 University of Florida 2294**  
Halley optical probe experiment  
*Period* *Obligations*  
03/01/82-09/30/86 FY83: \$143,966 TOTAL: \$333,966  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Weinberg, J. L. HQ-EL/Brunk, W. E. 11-Astronomy  
HQ-EL/Brinton, H. C.

**NASW 3624 University of Florida 2295**  
Operation of the NASA/Florida state technology applications center  
*Period* *Obligations*  
07/01/82-06/30/83 FY83: \$212,965 TOTAL: \$212,965  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Thornton, J. R. HQ-LG/Bivins, R. G. 49-Engr, NEC  
HQ-LG/Ault, L.

**NAS10-9892 University of Florida 2296**  
Study entitled satellite freeze forecast system  
*Period* *Obligations*  
07/31/80-03/31/83 FY83: \$24,996 TOTAL: \$347,634  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Martsolf, J. D. KSC/Withrow, R. 31-Atmos Sci

**NCA 2-240101 University of Florida 2297**  
Mechanisms of fluid intake  
*Period* *Obligations*  
01/01/81-12/31/82 FY83: TOTAL: \$57,600  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fregly, M. J. ARC/Greenleaf, J. E. 51-Biological Sci

**NCA 2-240301 University of Florida 2298**  
Drinking in animals  
*Period* *Obligations*  
01/01/83-12/31/84 FY83: \$29,972 TOTAL: \$29,972  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fregly, M. J. ARC/Greenleaf, J. E. 51-Biological Sci

**NCC 2-23 University of Florida 2299**  
The investigation of the flow about general fuselage shapes at high angles of attack  
*Period* *Obligations*  
11/01/79-11/30/82 FY83: TOTAL: \$114,681  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Clarkson, M. H. ARC/Malcolm, G. N. 41-Aero Engr

**NCC 2-133 University of Florida 2300**  
The evaluation of a jet/aerodynamic surface interference model  
*Period* *Obligations*  
08/15/81-10/31/83 FY83: TOTAL: \$37,794  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fearn, R. F. ARC/Koenig, D. G. 41-Aero Engr  
Furlong, K. L.

**NGT 10-005-800 University of Florida 2301**  
A separated flow study  
*Period* *Obligations*  
09/01/80-12/31/82 FY83: TOTAL: \$19,695  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Clarkson, M. HQ-LB/Carter, C. H. 41-Aero Engr

**NGT 10-005-802 University of Florida 2302**  
Graduate student researchers program  
*Period* *Obligations*  
06/01/81-05/31/84 FY83: TOTAL: \$24,170  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tesar, D. HQ-LB/Carter, C. H. 46-Mech Engr

**NGT 10-005-803 University of Florida 2303**  
Graduate student researchers program  
*Period* *Obligations*  
06/15/81-06/14/83 FY83: TOTAL: \$23,309  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fearn, R. L. HQ-LB/Carter, C. H. 41-Aero Engr

**NGT 10-005-804 University of Florida 2304**  
Basic contract for graduate student researchers  
*Period* *Obligations*  
08/01/83-07/31/84 FY83: \$15,000 TOTAL: \$15,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tesar, D. HQ-LB/Owens, F. C. 46-Mech Engr

**NSG 2288 University of Florida 2305**  
A jet in a crossflow  
*Period* *Obligations*  
01/01/78-06/30/84 FY83: \$50,000 TOTAL: \$220,261  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fearn, R. L. ARC/Aoyagi, K. 41-Aero Engr  
ARC/Koenig, D. G.

**NSG 3254 University of Florida 2306**  
Mechanisms of denitrification of grain boundary glassy phases in silicon nitride materials  
*Period* *Obligations*  
03/26/79-09/24/82 FY83: TOTAL: \$127,200  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hench, L. L. LERC/Dutta, S. 47-Materials Engr

**NSG 7236 University of Florida 2307**  
Use of remote sensing in solving Florida's geological and coastal engineering problems  
*Period* *Obligations*  
07/01/76-06/30/86 FY83: \$60,378 TOTAL: \$760,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ruth, B. E. HQ-EL/Uyahov, J. T. 39-Env Sci, NEC  
Degner, J. D.

**NAG 1-207 University of Miami 2308**  
A hybrid two-three dimensional photochemical model of the stratosphere and troposphere  
*Period* *Obligations*  
08/11/81-11/10/82 FY83: \$10,769 TOTAL: \$66,580  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gidel, L. T. LARC/Fishman, J. 31-Atmos Sci  
LARC/Mugler, J. P.

**NASA'S UNIVERSITY PROGRAM**  
**FLORIDA (Continued)**

**NAG 2-150** **University of Miami** **2309**  
 Muscle fiber type distribution relative to muscle weakness: A new method  
*Period* *Obligations*  
 12/01/81-11/30/83 FY83: \$38,800 TOTAL: \$73,800  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Kerrick, W. G. ARC/Ellis, S. 59-Life Sci, NEC

**NAG 3-444** **University of Miami** **2310**  
 A numerical model suitable for short-range prediction of air flow at jet stream altitudes  
*Period* *Obligations*  
 07/02/83-12/02/83 FY83: \$10,381 TOTAL: \$10,381  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bleck, R. LERC/Steinberg, R. 41-Aero Engr

**NAGW 258** **University of Miami** **2311**  
 Laser brittorum probe for measuring sea parameters from a submerged vehicle  
*Period* *Obligations*  
 10/01/81-09/30/83 FY83: TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hirschberg, J. G. HQ-EB/Carder, K. L. 33-Oceanography  
 HQ-EB/Wilson, S. W.

**NAGW 273** **University of Miami** **2312**  
 An investigation of the utility of ocean color imagery for delineation of oceanic processes in the western North Atlantic  
*Period* *Obligations*  
 11/01/81-07/31/83 FY83: TOTAL: \$128,757  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Gordon, H. R. HQ-EB/Carder, K. L. 33-Oceanography  
 Brown, O. B. HQ-EB/Wilson, W. S.  
 Evans, R. H.

**NAS 5-22963** **University of Miami** **2313**  
 Nimbus G coastal zone color scanner sensor experiment  
*Period* *Obligations*  
 02/02/76-12/31/84 FY83: \$44,910 TOTAL: \$326,237  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Gordon, H. R. GSFC/Szajna, E. F. 31-Atmos Sci

**NAS 5-26201** **University of Miami** **2314**  
 Investigations of medium wavelength magnetic anomalies in the Eastern Pacific using magnetic fields monitor satellite data  
*Period* *Obligations*  
 06/02/80-07/02/83 FY83: TOTAL: \$81,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Harrison, C. G. GSFC/Oseroff, H. 32-Geological Sci

**NAS 5-26768** **University of Miami** **2315**  
 Optical thickness as related to pollutant episodes and the concentration of visibility degrading pollutants  
*Period* *Obligations*  
 11/04/81-08/31/83 FY83: TOTAL: \$20,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Prospero, J. M. GSFC/Fraser, R. S. 54-Env Biology

**NAS 5-27642** **University of Miami** **2316**  
 Maintenance and operation of the application technology satellite (ATS-3) contractor will assume command and control of satellite tracking  
*Period* *Obligations*  
 04/21/83-03/31/86 FY83: \$193,279 TOTAL: \$193,279  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Brown, D. O. GSFC/Wales, R. O. 49-Engr, NEC

**NAS 8-33523** **University of Miami** **2317**  
 Modification of a computer general circulation model of the Earth's atmosphere for the atmospheric general circulation experiment  
*Period* *Obligations*  
 04/16/80-08/01/84 FY83: TOTAL: \$259,459  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Pitcher, E. J. MSFC/Fowles, W. W. 31-Atmos Sci  
 Malone, R. C. MSFC/Fichtl, G. H.

**NAS 9-15473** **University of Miami** **2318**  
 Study of sodium homeostasis and renin-aldosterone during water immersion  
*Period* *Obligations*  
 11/21/77-11/30/83 FY83: TOTAL: \$117,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Epstein, M. JSC/Huntoon, C. L. 56-Medical Sciences

**NAS10-10531** **University of Miami** **2319**  
 Study biological production of hydrogen  
*Period* *Obligations*  
 09/28/82-03/31/83 FY83: TOTAL: \$30,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Mitsui, A. KSC/Knott, W. 39-Env Sci, NEC

**NCA 2-438101** **University of Miami** **2320**  
 Interchange for use of university facilities and services to support satellite communications development  
*Period* *Obligations*  
 08/01/81-10/31/82 FY83: TOTAL: \$14,844  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Brown, O. ARC/Gibbs, B. P. 39-Env Sci, NEC

**NCA 2-438201** **University of Miami** **2321**  
 Air traffic control conflict intensity indices workload measurement and control  
*Period* *Obligations*  
 06/01/82-05/31/84 FY83: \$30,000 TOTAL: \$56,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Friedman, M. F. ARC/Tobias, L. 99-Multi-Discip

**NCC 2-152** **University of Miami** **2322**  
 Studies of flight-deck automation  
*Period* *Obligations*  
 08/15/81-10/31/83 FY83: \$92,644 TOTAL: \$197,531  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Wiener, E. L. ARC/Curry, R. E. 69-Psych, NEC

# **NASA'S UNIVERSITY PROGRAM** **FLORIDA (Continued)**

**NGR 10-007-008**      **University of Miami**      **2323**  
Research in the Institute of Molecular Evolution in the School  
of Environmental and Planetary Sciences  
*Period*      *Obligations*  
06/09/64-10/31/83      FY83: \$77,700      TOTAL: \$2,808,740  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Fox, S. W.      HQ-EB/Devincenzi, D. L.      12-Chemistry

**NSG 7510**      **University of Miami**      **2324**  
Freezing brines: A Martian regolith model  
*Period*      *Obligations*  
12/01/78-09/30/83      FY83:      TOTAL: \$10,585  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Brass, G. B.      HQ-EL/Quaide, W. L.      32-Geological Sci  
HQ-EL/French, B. M.

**NAG 2-74**      **University of South Florida**      **2325**  
Investigations on the principles of zoogeography  
*Period*      *Obligations*  
09/15/80-07/15/83      FY83:      TOTAL: \$60,242  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Briggs, J. C.      ARC/Billingham, J.      54-Env Biology

**NAGW 465**      **University of South Florida**      **2326**  
Development of in-site sensors to complement ocean color  
remote sensing  
*Period*      *Obligations*  
03/01/83-02/28/84      FY83: \$94,278      TOTAL: \$94,278  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Carder, K. L.      HQ-EE/Esaias, W. E.      33-Oceanography  
HQ-EE/Wilson, W. S.

**NAS 1-16844**      **University of South Florida**      **2327**  
Fabrication and test of monitor for NH<sub>3</sub>, NHO<sub>3</sub>, NH<sub>4</sub> and  
NH<sub>3</sub>  
*Period*      *Obligations*  
09/30/81-12/31/83      FY83: \$27,935      TOTAL: \$93,685  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Braman, R. S.      LARC/Hoell, J.      31-Atmos Sci

## **GEORGIA**

**NAG 1-410**      **Atlanta University**      **2328**  
Construction of finite difference schemes having special proper-  
ties for ordinary and partial differential equations  
*Period*      *Obligations*  
10/01/83-09/30/84      FY83: \$180,000      TOTAL: \$180,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Mickens, R. E.      LARC/Shoosmith, J. N.      21-Mathematics

**NAG 1-411**      **Atlanta University**      **2329**  
On inhomogeneous stellar media  
*Period*      *Obligations*  
10/01/83-09/30/84      FY83: \$129,969      TOTAL: \$129,969  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Martin, B. J.      LARC/Meador, W. E.      13-Physics  
LARC/Conway, E. J.

**NAG 1-412**      **Atlanta University**      **2330**  
Implementation study of fuzzy automata with applications to the  
human-computer interface and feature detection in digitized  
images  
*Period*      *Obligations*  
10/01/83-09/30/84      FY83: \$160,000      TOTAL: \$160,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Setzer, C. B.      LARC/Goode, P. W.      29-Math/Computer, NEC

**NAG 1-413**      **Atlanta University**      **2331**  
Random equations in aerodynamics  
*Period*      *Obligations*  
10/01/83-09/30/84      FY83: \$121,144      TOTAL: \$121,144  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Bharucha-reid, A. T.      LARC/Desmarais, R. N.      41-Aero Engr

**NAG 3-113**      **Atlanta University**      **2332**  
Design and implementation of a networked automated labora-  
tory  
*Period*      *Obligations*  
10/20/80-09/17/84      FY83: \$116,044      TOTAL: \$411,281  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Owen, G. S.      LERC/Greenbauer-seng, L. A.      19-Phys Sci, NEC

**NSG 2143**      **Clark College**      **2333**  
Aerosol formation and the Space Shuttle program  
*Period*      *Obligations*  
04/15/76-06/30/82      FY83:      TOTAL: \$131,589  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Veluri, V. R.      ARC/Whitten, R. C.      12-Chemistry  
Utley, H. B.

**NAG 2-87**      **Emory University**      **2334**  
Effect of decreased gravity on circulation in the rat  
*Period*      *Obligations*  
01/01/81-12/31/83      FY83: \$34,000      TOTAL: \$107,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Popovic, V. P.      ARC/Holton, E. M.      51-Biological Sci

**NAS 2-10527**      **Emory University**      **2335**  
Cardiovascular adaptation of white rats to decreased gravity of  
Space Shuttle/Spacelab inflight conditions  
*Period*      *Obligations*  
01/17/80-10/15/82      FY83: \$119,000      TOTAL: \$232,586  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Popovic, V. P.      ARC/Gomersall, E. W.      51-Biological Sci

**NAS 2-10627**      **Emory University**      **2336**  
Maintenance of NASA primate resources and primate baseline  
data  
*Period*      *Obligations*  
05/01/80-09/30/83      FY83: \$121,260      TOTAL: \$532,884  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
McClure, H. M.      ARC/Goldsboro, J. A.      59-Life Sci, NEC  
ARC/Gommersall, E. W.

**NASA'S UNIVERSITY PROGRAM**  
**GEORGIA (Continued)**

**NGL 11-001-009 Emory University 2337**  
 Study of cardiovascular adaptation during long-term weightlessness  

Period	Obligations
05/12/85-06/30/82	FY83: TOTAL: \$627,198
Prin. Invest. Popovic, V. P.	NASA Tech. Officer ARC/Holton, E. M. CASE Category 51-Biological Sci

**NAG 1-40 Georgia Institute of Technology 2338**  
 Mean velocities and Reynolds stresses in a juncture flow  

Period	Obligations
03/31/80-01/31/83	FY83: TOTAL: \$100,622
Prin. Invest. McMahon, H. M. Hubbart, J. E.	NASA Tech. Officer LARC/Scheiman, J. CASE Category 41-Aero Engr

**NAG 1-50 Georgia Institute of Technology 2339**  
 Development of an airborne laser photofragmentation  

Period	Obligations
03/01/80-02/29/84	FY83: \$395,066 TOTAL: \$1,122,015
Prin. Invest. Davis, D. D. Bradshaw, J. D. Rogers, M.	NASA Tech. Officer LARC/Browell, E. V. CASE Category 31-Atmos Sci

**NAG 1-85 Georgia Institute of Technology 2340**  
 The photochemistry of tropospheric carbon-oxygen (CO) and nitrogen-oxygen (NOx) and the impact anthropogenic emissions  

Period	Obligations
07/01/80-06/30/83	FY83: TOTAL: \$196,728
Prin. Invest. Chameides, W. L.	NASA Tech. Officer LARC/Reichle, H. G. CASE Category 31-Atmos Sci
	LARC/Hypes, W. D.

**NAG 1-133 Georgia Institute of Technology 2341**  
 Development of an analytical technique for the optimization of jet engine inlet and duct acoustic liners  

Period	Obligations
03/01/81-04/30/82	FY83: TOTAL: \$30,571
Prin. Invest. Zinn, B. T. Meyer, W. L.	NASA Tech. Officer LARC/Lester, H. C. CASE Category 41-Aero Engr
	LARC/Hardin, J. C.

**NAG 1-306 Georgia Institute of Technology 2342**  
 Interference drag in a juncture flow  

Period	Obligations
01/01/83-12/31/83	FY83: \$42,367 TOTAL: \$42,367
Prin. Invest. McMahon, H. M. Hubbart, J. E.	NASA Tech. Officer LARC/Schelman, J. CASE Category 41-Aero Engr

**NAG 1-385 Georgia Institute of Technology 2343**  
 Diagnostic and theoretical studies of global tropospheric photochemistry  

Period	Obligations
07/15/83-07/14/84	FY83: \$72,000 TOTAL: \$72,000
Prin. Invest. Chameides, W. L.	NASA Tech. Officer LARC/Reichle, H. G., Jr. CASE Category 31-Atmos Sci
	LARC/Hypes, W. D.

**NAG 1-392 Georgia Institute of Technology 2344**  
 Modeling of transient heat pipe operation  

Period	Obligations
08/19/83-08/18/84	FY83: \$36,000 TOTAL: \$36,000
Prin. Invest. Colwell, G. T.	NASA Tech. Officer LARC/Camarda, C. J. CASE Category 46-Mech Engr
	LARC/Adelman, H. M.

**NAG 1-398 Georgia Institute of Technology 2345**  
 Rotor blade configuration modeling for composite designs  

Period	Obligations
08/18/83-08/17/84	FY83: \$25,000 TOTAL: \$25,000
Prin. Invest. Rehfield, L. W.	NASA Tech. Officer LARC/Nixon, M. W. CASE Category 41-Aero Engr
	LARC/Roderick, G. L.

**NAG 2-123 Georgia Institute of Technology 2346**  
 Pilot interaction with automated airborne decision making systems  

Period	Obligations
08/21/81-07/31/84	FY83: \$262,391 TOTAL: \$408,653
Prin. Invest. Rouse, W. B.	NASA Tech. Officer ARC/Palmer, E. A. CASE Category 69-Psych, NEC

**NAG 2-135 Georgia Institute of Technology 2347**  
 Development and evaluation of heat/impact resistant fabrics for the NASA TMG garment  

Period	Obligations
08/01/81-01/31/84	FY83: TOTAL: \$40,067
Prin. Invest. Olson, L. H.	NASA Tech. Officer ARC/Webbbon, B. W. CASE Category 49-Engr, NEC

**NAG 2-170 Georgia Institute of Technology 2348**  
 Inorganic analysis in controlled ecological life support system  

Period	Obligations
03/01/82-06/30/83	FY83: \$5,834 TOTAL: \$69,430
Prin. Invest. Carden, J.	NASA Tech. Officer ARC/Wydeven, T. J. CASE Category 49-Engr, NEC

**NAG 2-233 Georgia Institute of Technology 2349**  
 Technical analysis of molten carbonate CO2 concentrator in carbonation cell operating mode  

Period	Obligations
05/01/83-08/31/83	FY83: \$7,631 TOTAL: \$7,631
Prin. Invest. Winnick, J.	NASA Tech. Officer ARC/Quattrone, P. D. CASE Category 59-Life Sci, NEC

**NAG 2-238 Georgia Institute of Technology 2350**  
 A new approach to structural modeling of rotor blades  

Period	Obligations
07/01/83-06/30/84	FY83: \$42,000 TOTAL: \$42,000
Prin. Invest. Rehfield, L. W.	NASA Tech. Officer ARC/Hodges, D. H. CASE Category 41-Aero Engr

**NAG 3-38 Georgia Institute of Technology 2351**  
 Finite strain creep and creep crack growth analysis  

Period	Obligations
06/01/80-10/31/82	FY83: TOTAL: \$99,686
Prin. Invest. Atluri, S. N. Oliver, P. R.	NASA Tech. Officer LERC/Gross, B. CASE Category 46-Mech Engr
	LERC/Srawley, J. E.

**NASA'S UNIVERSITY PROGRAM  
GEORGIA (Continued)**

**NAG 3-67 Georgia Institute of Technology 2352**  
Prediction of sound radiation from different practical jet engine inlets

Period	Obligations
06/02/80-07/31/82	FY83: TOTAL: \$100,436
Prin. Invest.	NASA Tech. Officer CASE Category
Zinn, B. T.	LERC/Saule, A. V. 41-Aero Engr
Meyer, W. L.	LERC/Rice, E. J.

**NAS 1-15370 Georgia Institute of Technology 2359**  
Holographic data storage crystals experiment for the long duration exposure facility (LDEF)

Period	Obligations
04/21/78-03/31/84	FY83: TOTAL: \$31,808
Prin. Invest.	NASA Tech. Officer CASE Category
Gaylord, T. K.	LARC/O'neal, R. L. 45-Elec Engr
Callen, W. R.	LARC/Clark, L. G.

**NAG 3-77 Georgia Institute of Technology 2353**  
Surface temperatures and glassy state investigations in tribology

Period	Obligations
07/01/80-10/30/81	FY83: TOTAL: \$40,029
Prin. Invest.	NASA Tech. Officer CASE Category
Winer, W. O.	LERC/Jones, W. R. 46-Mech Engr
Bair, S.	

**NAS 1-16356 Georgia Institute of Technology 2360**  
Science support for Earth Radiation Budget Satellite (ERBS)/ stratospheric aerosol and gas experiment (SAGE)

Period	Obligations
08/07/80-06/85	FY83: \$42,000 TOTAL: \$180,738
Prin. Invest.	NASA Tech. Officer CASE Category
Grams, G. W.	LARC/McMaster, L. R. 31-Atmos Sci
	LARC/McCormick, M. P.

**NAG 3-255 Georgia Institute of Technology 2354**  
Effects of implantation on the high-temperature corrosion and hydrogen permeability of Fe-Ni-Cr and Ni-Cr-Al alloys

Period	Obligations
02/05/82-04/03/84	FY83: \$31,994 TOTAL: \$61,530
Prin. Invest.	NASA Tech. Officer CASE Category
Ribarsky, M. W.	LERC/Schron, S. R. 47-Materials Engr

**NAS 1-16357 Georgia Institute of Technology 2361**  
Science support for Earth Radiation Budget Satellite (ERBS)/ stratospheric aerosol and gas experiment (SAGE)

Period	Obligations
08/07/80-08/06/85	FY83: \$12,000 TOTAL: \$96,528
Prin. Invest.	NASA Tech. Officer CASE Category
Cunnold, D. M.	LARC/McMaster, L. R. 31-Atmos Sci
	LARC/McCormick, M. P.

**NAG 3-282 Georgia Institute of Technology 2355**  
Infrared technology for satellite power conversion

Period	Obligations
04/27/82-04/25/84	FY83: \$78,375 TOTAL: \$156,752
Prin. Invest.	NASA Tech. Officer CASE Category
Gallagher, J. J.	LERC/Krawczonek, W. M. 45-Elec Engr
Blue, M. D.	

**NAS 1-16845 Georgia Institute of Technology 2362**  
Summer technological institute

Period	Obligations
09/30/81-09/29/82	FY83: TOTAL: \$65,000
Prin. Invest.	NASA Tech. Officer CASE Category
Sayle, W. E.	LARC/Lee, R. B. 99-Multi-Discip

**NAG 3-346 Georgia Institute of Technology 2356**  
Topics in analysis of inelastic behavior of structures at elevated temperatures

Period	Obligations
12/10/82-12/09/83	FY83: \$65,183 TOTAL: \$65,183
Prin. Invest.	NASA Tech. Officer CASE Category
Atturi, S. N.	LERC/Chamis, C. C. 41-Aero Engr
	LERC/Hopkins, D. A.

**NAS 1-17141 Georgia Institute of Technology 2363**  
Summer technology institute

Period	Obligations
09/23/82-09/22/83	FY83: TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer CASE Category
Freeston, D. W.	LARC/Lee, R. B. 99-Multi-Discip

**NAG 3-442 Georgia Institute of Technology 2357**  
Infrared power cells for satellite power conversion

Period	Obligations
06/28/83-03/27/84	FY83: \$49,852 TOTAL: \$49,852
Prin. Invest.	NASA Tech. Officer CASE Category
Summers, C. J.	LERC/Krawczonek, W. M. 13-Physics
Gallagher, J. J.	

**NAS 1-17150 Georgia Institute of Technology 2364**  
Ozone transport in the lower stratosphere and the ozone-NO2 relationship

Period	Obligations
09/20/82-09/19/83	FY83: TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer CASE Category
Cunnold, D. M.	LARC/McMaster, L. R. 31-Atmos Sci
	LARC/McCormick, M. P.

**NAS 1-14654 Georgia Institute of Technology 2358**  
Investigation of the effects of long duration exposure on active optical system components

Period	Obligations
10/14/76-01/31/84	FY83: \$15,006 TOTAL: \$219,252
Prin. Invest.	NASA Tech. Officer CASE Category
Blue, M. D.	LARC/Clark, L. G. 45-Elec Engr
Gallagher, J. J.	LARC/Battista, J. D.
Shackelford, R. G.	

**NAS 1-17545 Georgia Institute of Technology 2365**  
Summer technological institute

Period	Obligations
09/22/83-09/21/84	FY83: \$75,000 TOTAL: \$75,000
Prin. Invest.	NASA Tech. Officer CASE Category
Freeston, W. D.	LARC/Lee, R. B. 99-Multi-Discip
	LARC/Merritt, V. B.

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**NAS 5-25817 Georgia Institute of Technology 2366**  
 Study of Nimbus-7 applications investigation from priority 1 listing  

Period	Obligations	
08/20/79-12/31/84	FY83: \$10,673	TOTAL: \$82,506
Prin. Invest.	NASA Tech. Officer	CASE Category
Cunwold, D. M.	GSFC/Hurley, E. J.	39-Env Sci, NEC

**NAS 5-27257 Georgia Institute of Technology 2367**  
 Engineering support for GSFC storm hazards-82  

Period	Obligations	
05/07/82-12/31/83	FY83: \$19,792	TOTAL: \$50,777
Prin. Invest.	NASA Tech. Officer	CASE Category
Wilson, B. J.	GSFC/Levine, D. M.	41-Aero Engr

**NAS 5-27264 Georgia Institute of Technology 2368**  
 The prediction of the dynamical impact of changes in stratospheric ozone  

Period	Obligations	
07/01/82-12/31/83	FY83: \$17,110	TOTAL: \$25,180
Prin. Invest.	NASA Tech. Officer	CASE Category
Cunnold, D.	GSFC/Donley, J.	31-Atmos Sci

**NAS 5-27385 Georgia Institute of Technology 2369**  
 Modification, installation, operation, and maintenance of the advanced microwave moisture sounder  

Period	Obligations	
09/24/82-07/23/83	FY83: \$73,001	TOTAL: \$78,001
Prin. Invest.	NASA Tech. Officer	CASE Category
Gagliano, J. A.	GSFC/Dod, L. R.	45-Elec Engr

**NAS 8-32397 Georgia Institute of Technology 2370**  
 Digitizing of LANDSAT data  

Period	Obligations	
01/13/77-06/30/85	FY83:	TOTAL: \$24,316
Prin. Invest.	NASA Tech. Officer	CASE Category
Shackelford, R. G.	MSFC/Downs, S. W., Jr.	
Faust, N. L.	MSFC/Huffman, J. D.	39-Env Sci, NEC

**NAS 8-33438 Georgia Institute of Technology 2371**  
 Quantitative analysis of metallurgical specimens  

Period	Obligations	
06/04/79-11/15/83	FY83:	TOTAL: \$26,218
Prin. Invest.	NASA Tech. Officer	CASE Category
Brown, J. L.	MSFC/Johnston, M. H.	47-Materials Engr
	MSFC/Parr, R. A.	

**NAS 8-33800 Georgia Institute of Technology 2372**  
 Ice/frost detection using millimeter wave radiometry  

Period	Obligations	
05/28/80-10/31/81	FY83:	TOTAL: \$137,217
Prin. Invest.	NASA Tech. Officer	CASE Category
Gagliano, J. A.	MSFC/Gleason, E. H.	45-Elec Engr
	MSFC/Bachtel, F. D.	

**NAS 8-35048 Georgia Institute of Technology 2373**  
 Ion implantation and plating to improve surface hardness and wear characteristics of 440 stainless steel for bearing application  

Period	Obligations	
09/22/82-12/02/83	FY83:	TOTAL: \$134,964
Prin. Invest.	NASA Tech. Officer	CASE Category
Grenga, H. E.	MSFC/Whitaker, A. F.	13-Physics
Hochman, R. F.	MSFC/Gause, R. L.	

**NAS 9-16353 Georgia Institute of Technology 2374**  
 Measurement of RF attenuation of CV102 flight thermal protection system (TPS) over antenna subsystem  

Period	Obligations	
05/01/81-12/01/83	FY83: \$40,000	TOTAL: \$139,996
Prin. Invest.	NASA Tech. Officer	CASE Category
Cooke, W. P.	JSC/Eggers, D. S.	45-Elec Engr

**NAS10-10560 Georgia Institute of Technology 2375**  
 Oxidant gas treatment  

Period	Obligations	
10/06/82-08/31/83	FY83: \$30,145	TOTAL: \$30,145
Prin. Invest.	NASA Tech. Officer	CASE Category
Winnick, J.	KSC/Lundy, F. E., Jr.	43-Chem Engr
	KSC/English, J. G., Jr.	

**NAS10-10685 Georgia Institute of Technology 2376**  
 Flow induced vibrations in flexible components of Space Shuttle  

Period	Obligations	
05/16/83-05/16/84	FY83: \$39,991	TOTAL: \$39,991
Prin. Invest.	NASA Tech. Officer	CASE Category
Desai, P. V.	KSC/Lin, F. N.	46-Mech Engr
	KSC/Walker, S. W.	

**NCA 2-260102 Georgia Institute of Technology 2377**  
 Qualitative elemental analysis of high pressure liquid chromatography peaks by induced coupled element separation: An interfacing study  

Period	Obligations	
06/23/81-05/31/82	FY83:	TOTAL: \$8,017
Prin. Invest.	NASA Tech. Officer	CASE Category
Carden, J. L.	ARC/MacElroy, R. D.	12-Chemistry
Browner, R.	ARC/Wydeven, T., Jr.	

**NCC 2-9 Georgia Institute of Technology 2378**  
 Three-dimensional simulation of the Jovian circulation  

Period	Obligations	
07/01/79-10/31/81	FY83:	TOTAL: \$25,994
Prin. Invest.	NASA Tech. Officer	CASE Category
Alyea, F. N.	ARC/Young, R. E.	31-Atmos Sci

**NCC 2-119 Georgia Institute of Technology 2379**  
 Engineering design and fabrication of a prototype state-of-the-art space suit  

Period	Obligations	
02/15/81-02/14/83	FY83:	TOTAL: \$165,926
Prin. Invest.	NASA Tech. Officer	CASE Category
Olson, L. H.	ARC/Vyukal, H. C.	49-Engr, NEC

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**NCC 2-182**      **Georgia Institute of Technology**      **2380**  
 Development optical interference filters for the wavelength 28um to 160um

<i>Period</i>		<i>Obligations</i>
04/01/82-03/31/83	FY83:	TOTAL: \$12,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Holah, G.	ARC/Goebel, J. H.	19-Phys Sci, NEC
	ARC/Kittel, P.	

**NCC 3-14**      **Georgia Institute of Technology**      **2381**  
 Interdisciplinary collaboration in tribology

<i>Period</i>		<i>Obligations</i>
05/19/80-11/30/83	FY83: \$1	TOTAL: \$140,367
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Winer, W. O.	LERC/Jones, W. R.	46-Mech Engr
Ramalingam, S.	LERC/Wedeven, L. D.	

**NSG 1493**      **Georgia Institute of Technology**      **2382**  
 Science support for solar occultation experiments with the Nimbus-G/SAM II and AEM-B/SAGE spacecraft sensors

<i>Period</i>		<i>Obligations</i>
01/16/78-02/29/84	FY83:	TOTAL: \$275,354
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Grams, G. W.	LARC/McMaster, L. R.	31-Atmos Sci
	LARC/McCormick, M. P.	

**NSG 1643**      **Georgia Institute of Technology**      **2383**  
 Ozone transport in the lower stratosphere and the ozone-NO2 relationship

<i>Period</i>		<i>Obligations</i>
08/01/79-12/31/82	FY83:	TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cunnold, D. M.	LARC/Master, L. R.	31-Atmos Sci
	LARC/McCormick, M. P.	

**NSG 2356**      **Georgia Institute of Technology**      **2384**  
 Development of molded, coated fabric joints

<i>Period</i>		<i>Obligations</i>
12/01/78-12/31/83	FY83: \$49,755	TOTAL: \$246,503
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Olson, L. H.	ARC/Vykukal, H. C.	49-Engr, NEC
Freeston, D.		

**NSG 2363**      **Georgia Institute of Technology**      **2385**  
 In-situ measurements of optical properties of stratospheric aerosols using NASA U-2 aircraft

<i>Period</i>		<i>Obligations</i>
02/01/79-12/31/83	FY83: \$49,006	TOTAL: \$247,611
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Grams, G. W.	ARC/Margozzi, A. P.	31-Atmos Sci

**NSG 3260**      **Georgia Institute of Technology**      **2386**  
 A viscous-inviscid interactive procedure for rotational flow in cascades of two-dimensional airfoils of arbitrary shape

<i>Period</i>		<i>Obligations</i>
03/15/79-08/12/82	FY83:	TOTAL: \$77,644
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnston, W. A.	LERC/Sockol, P. M.	41-Aero Engr

**NSG 5012**      **Georgia Institute of Technology**      **2387**  
 Research in millimeter wave techniques

<i>Period</i>		<i>Obligations</i>
06/15/74-03/31/84	FY83: \$50,276	TOTAL: \$806,710
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Forsythe, R. E.	GSFC/Walton, W. T.	45-Elec Engr
	GSFC/Shiue, J. C.	

**NAG 5-242**      **Georgia State University**      **2388**  
 Satellite observations of selected astronomical objects and quasars

<i>Period</i>		<i>Obligations</i>
07/01/82-12/31/83	FY83: \$4,000	TOTAL: \$9,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Miller, H. R.	GSFC/Kondo, Y.	11-Astronomy

**NAG 3-371**      **La Grange College**      **2389**  
 Automation of burner reg assemblies for monitoring and data collection purposes

<i>Period</i>		<i>Obligations</i>
11/30/82-05/30/83	FY83: \$73,187	TOTAL: \$73,187
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cooper, K., Jr.	LERC/Stearns, C. A.	22-Computer Science
	LERC/Deadmore, D. L.	

**NAG 8-3**      **Morehouse College**      **2390**  
 Numerical differentiation and interpolation procedure with error estimates for non-exact data

<i>Period</i>		<i>Obligations</i>
02/15/80-09/14/82	FY83:	TOTAL: \$26,057
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bozeman, R. E.	MSFC/Campbell, W.	21-Mathematics

**NAGW 259**      **Morehouse College**      **2391**  
 Research on the matrix-isolation infrared and laser-Raman study of molecular structure of chlorine nitrates

<i>Period</i>		<i>Obligations</i>
10/01/81-03/31/83	FY83:	TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hall, J. H., Jr.	HQ-EB/Chandra, S.	31-Atmos Sci
	HQ-EB/Watson, R. T.	

**NAS 5-23571**      **Morehouse College**      **2392**  
 Application of medical information management system for medical record keeping

<i>Period</i>		<i>Obligations</i>
06/09/76-01/08/84	FY83:	TOTAL: \$122,865
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Barreras, R. J.	GSFC/Alterescu, S. 56-Medical Sciences	
	GSFC/Friedman, D. S.	

**NAG 5-280**      **University of Georgia**      **2393**  
 Investigation of rapidly evolving short period eclipsing bindries

<i>Period</i>		<i>Obligations</i>
10/01/82-11/30/83	FY83: \$9,790	TOTAL: \$9,790
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shaw, J. S.	GSFC/Kondo, Y.	11-Astronomy
Guinan, E. F.		



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**NAG 5-288 University of Georgia 2394**  
Potential heighting accuracies and information content of  
stereoscope sensor data  
*Period Obligations*  
01/15/83-04/14/84 FY83: \$26,641 TOTAL: \$26,641  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Welch, R. A. GSFC/Blodget, H. W. 19-Phys Sci, NEC  
GSFC/Cressy, P. J.

**NAG 5-365 University of Georgia 2395**  
Observations of selected white dwarf binaries  
*Period Obligations*  
08/15/83-08/14/84 FY83: \$8,200 TOTAL: \$8,200  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Scott, J. S. GSFC/Kondo, Y. 11-Astronomy

**NAS 5-27383 University of Georgia 2396**  
Comparative assessment of LANDSAT-D MSS and TM data  
quality  
*Period Obligations*  
10/12/82-10/11/84 FY83: \$83,762 TOTAL: \$83,762  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Welch, R. A. GSFC/Kugelman, D. D. 49-Engr, NEC  
Faust, N. L. GSFC/Stuart, L. M.

**NASW 3247 University of Georgia 2397**  
For operation of Cosmic  
*Period Obligations*  
05/01/79-04/30/84 FY83: \$149,889 TOTAL: \$1,371,889  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Carmon, J. L. HQ-LG/Ault, L. A. 22-Computer Science  
HQ-LG/Perdirtz, G. F.

**NAS13-190 University of Georgia 2398**  
Determination of the utility of thematic mapper simulator data  
for urban land use/cover classification in Georgia  
*Period Obligations*  
10/22/81-10/21/83 FY83: \$9,987 TOTAL: \$28,868  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Welch, R. NSTL/Conner, P. K. 32-Geological Sci

**NSG 7539 University of Georgia 2399**  
Comparative analysis of terrestrial and Martian labyrinth terrains  
*Period Obligations*  
03/01/79-08/31/82 FY83: TOTAL: \$50,900  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Brook, G. HQ-EL/Boyce, J. M. 32-Geological Sci

**HAWAII**

**NAG 2-165 University of Hawaii - Manoa 2400**  
Astronomical applications for hybrid silicon charged coupled  
device detector arrays  
*Period Obligations*  
03/01/82-12/31/83 FY83: \$50,147 TOTAL: \$89,501  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Capps, R. W. ARC/Goebel, J. H. 11-Astronomy  
ARC/McCreight, C. R.

**NAG 5-146 University of Hawaii - Manoa 2401**  
Magnesium observations of a young cluster  
*Period Obligations*  
03/15/81-12/31/83 FY83: \$53,900 TOTAL: \$141,224  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Simon, T. GSFC/Kondo, Y. 11-Astronomy  
Fekel, F. C., Jr.  
Ayres, T. R.

**NAG 8-419 University of Hawaii - Manoa 2402**  
X-ray studies of Hertzprung gap and related stars  
*Period Obligations*  
07/27/81-06/30/83 FY83: TOTAL: \$7,125  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Simon, T. MSFC/Stone, J. F. 11-Astronomy

**NAG 8-436 University of Hawaii - Manoa 2403**  
Studies of distant clusters of galaxies and the quasar 3C273  
*Period Obligations*  
05/17/82-05/31/83 FY83: TOTAL: \$14,609  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Henry, J. P. MSFC/Stone, J. F. 11-Astronomy

**NAGW 37 University of Hawaii - Manoa 2404**  
User support and data reduction and analysis of lunar core  
images  
*Period Obligations*  
03/01/80-05/31/84 FY83: \$16,971 TOTAL: \$87,892  
*Prin. Invest. NASA Tech. Officer CASE Category*  
McCord, T. B. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/Taylor, L. A.

**NAGW 42 University of Hawaii - Manoa 2405**  
Research on remote sensing and geologic studies of the lunar  
crust  
*Period Obligations*  
03/01/80-04/30/83 FY83: TOTAL: \$110,501  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hawke, R. B. HQ-EL/Quaide, W. L. 32-Geological Sci

**NAGW 65 University of Hawaii - Manoa 2406**  
A colloquium on the satellites of Jupiter  
*Period Obligations*  
03/01/80-03/31/82 FY83: TOTAL: \$14,095  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cruikshank, D. HQ-EL/Brunk, W. E. 11-Astronomy

**NAGW 115 University of Hawaii - Manoa 2407**  
Spectral properties of ice-mineral mixtures  
*Period Obligations*  
11/01/80-01/31/84 FY83: \$75,116 TOTAL: \$175,738  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Clark, R. N. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NASA'S UNIVERSITY PROGRAM**  
**HAWAII (Continued)**

**NAGW 133 University of Hawaii - Manoa 2408**  
 Volatile evolution  
*Period* *Obligations*  
 02/01/81-02/29/84 FY83: \$45,000 TOTAL: \$160,180  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Fanele, F. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 136 University of Hawaii - Manoa 2409**  
 Longitudinal asymmetries on Callisto and Europa  
*Period* *Obligations*  
 02/01/81-12/31/84 FY83: \$15,000 TOTAL: \$25,196  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Morrison, D. HQ-EL/Boyce, J. M. 32-Geological Sci

**NAGW 153 University of Hawaii - Manoa 2410**  
 A study of the lo-associated plasma and neutral sodium cloud  
*Period* *Obligations*  
 04/01/81-05/31/84 FY83: \$35,737 TOTAL: \$93,737  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Pilcher, C. B. HQ-EL/Brinton, H. C. 13-Physics  
 HQ-EL/Brunk, W. E.

**NAGW 171 University of Hawaii - Manoa 2411**  
 Regolith adsorption and exchange of atmospheric constituents on Mars  
*Period* *Obligations*  
 04/01/81-02/29/84 FY83: \$51,315 TOTAL: \$139,401  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Fanale, F. P. HQ-EL/Quaide, W. L. 32-Geological Sci  
 HQ-EL/Boyce, J. M.

**NAGW 237 University of Hawaii - Manoa 2412**  
 Geologic studies of planetary volcanic and impact processes  
*Period* *Obligations*  
 08/01/81-03/31/84 FY83: \$65,265 TOTAL: \$105,173  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hawke, B. R. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 318 University of Hawaii - Manoa 2413**  
 Development of island stations for satellite read-out of in-site sensing of environmental properties  
*Period* *Obligations*  
 04/01/82-09/30/83 FY83: \$108,843 TOTAL: \$273,639  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 McCord, T. B. HQ-EE/McGoldrick, L. F.  
 Wyrkt, K. HQ-EE/Gregg, W. W. 33-Oceanography  
 Chave, K.

**NAGW 348 University of Hawaii - Manoa 2414**  
 Io's surface and atmosphere  
*Period* *Obligations*  
 07/21/82-07/20/84 FY83: \$66,711 TOTAL: \$129,711  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Fanale, F. P. HQ-EL/Williams, R. J. 32-Geological Sci  
 HQ-EL/French, B. M.

**NAGW 437 University of Hawaii - Manoa 2415**  
 Analysis of Martian surface materials using radar thermal and color data and geological evolution of the cavity cratered hemisphere of Mars  
*Period* *Obligations*  
 04/01/83-03/31/84 FY83: \$45,000 TOTAL: \$45,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Mark, P. M. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAS 5-25181 University of Hawaii - Manoa 2416**  
 Modifications to and operations and maintenance of the Lunar Laser Observatory at the University of Hawaii in support of various satellite missions  
*Period* *Obligations*  
 08/09/78-09/30/84 FY83: \$739,000 TOTAL: \$2,667,226  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Jefferies, J. T. GSFC/Hughes, W. E. 11-Astronomy  
 GSFC/Gardner, V.

**NAS 8-33219 University of Hawaii - Manoa 2417**  
 The modeling of the solar upper photosphere and lower chromosphere based upon ATM data  
*Period* *Obligations*  
 03/01/79-06/30/82 FY83: TOTAL: \$65,796  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Heasley, J. N. MSFC/Deloach, A. C. 13-Physics  
 MSFC/Snoddy, W. C.

**NAS 9-16048 University of Hawaii - Manoa 2418**  
 Life science flight experiment surface chem bubble formation  
*Period* *Obligations*  
 01/17/80-10/31/82 FY83: TOTAL: \$15,157  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 D'ariso, J. F. JSC/Peck, E. E. 59-Life Sci, NEC

**NASW 3159 University of Hawaii - Manoa 2419**  
 Provision of support during the preparatory stage for operation of the NASA infrared telescope facility  
*Period* *Obligations*  
 01/01/78-12/31/83 FY83: \$1,715,308 TOTAL: \$6,059,977  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Jefferies, J. T. HQ-EL/Brunk, W. E. 11-Astronomy  
 HQ-EL/Brinton, H. C.

**NASW 3460 University of Hawaii - Manoa 2420**  
 Construction of a data system for a charge coupled-device camera  
*Period* *Obligations*  
 01/15/81-07/15/83 FY83: TOTAL: \$91,336  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Pilcher, C. B. HQ-EL/Brunk, W. E. 11-Astronomy  
 HQ-EL/Murphy, R. E.

**NASW 3566 University of Hawaii - Manoa 2421**  
 Establishment of a planetary image center at the University of Hawaii  
*Period* *Obligations*  
 11/14/81-11/13/83 FY83: \$5,036 TOTAL: \$25,121  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hawke, B. R. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NASA'S UNIVERSITY PROGRAM**  
**HAWAII (Continued)**

**NGF 12-001-103 University of Hawaii - Manoa 2422**  
 Construction and furnishing of a permanent mid level facility (MLF) at Hale Pohaku in support of NASA's IRTF facility  
*Period Obligations*  
 10/01/82-12/31/84 FY83: \$1,479,901 TOTAL: \$1,479,901  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jefferies, J. T. HQ-EL/Brunk, W. E. 11-Astronomy  
 HQ-EL/Brinton, H. C.

**NGL 12-001-011 University of Hawaii - Manoa 2423**  
 Research in coronal and chromospheric physics  
*Period Obligations*  
 11/16/64-10/31/83 FY83: \$166,869 TOTAL: \$4,966,234  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jefferies, J. T. HQ-EZ/Chipman, E. G. 11-Astronomy

**NGL 12-001-057 University of Hawaii - Manoa 2424**  
 Research in planetary studies  
*Period Obligations*  
 05/21/68-07/30/84 FY83: TOTAL: \$6,116,924  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jefferies, J. T. HQ-EL/Brunk, W. E. 11-Astronomy  
 HQ-EL/Brinton, H. C.

**NGR 12-001-109 University of Hawaii - Manoa 2425**  
 N-heterocyclic compounds role in chemical evolution distribution in meteorites ancient sediments and as products of spark discharge reactions  
*Period Obligations*  
 06/26/72-12/15/83 FY83: \$34,607 TOTAL: \$457,985  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Folsome, C. E. HQ-EB/Geib, D. S. 12-Chemistry

**NSG 7312 University of Hawaii - Manoa 2426**  
 Remote compositional mapping of the lunar surface  
*Period Obligations*  
 02/01/77-03/31/84 FY83: \$203,190 TOTAL: \$1,499,302  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 McCord, T. B. HQ-EL/Quaide, W. L. 32-Geological Sci  
 HQ-EL/French, B. M.

**NSG 7323 University of Hawaii - Manoa 2427**  
 Research in planetary astronomy  
*Period Obligations*  
 02/01/77-02/28/84 FY83: \$114,999 TOTAL: \$700,328  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 McCord, T. B. HQ-EL/Brunk, W. E. 11-Astronomy  
 HQ-EL/Brinton, H. C.

**NSG 7403 University of Hawaii - Manoa 2428**  
 Study of physical processes affecting water ice on outer solar system objects  
*Period Obligations*  
 12/01/77-03/31/84 FY83: \$19,908 TOTAL: \$82,234  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Pilcher, C. B. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NSG 7462 University of Hawaii - Manoa 2429**  
 An investigation of the mineralogy and petrology or meteorite parent bodies utilizing reflectance spectroscopy  
*Period Obligations*  
 07/15/78-04/30/84 FY83: \$49,000 TOTAL: \$187,814  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gaffey, M. J. HQ-EL/Quaide, W. L. 32-Geological Sci  
 HQ-EL/French, B. M.

**NSG 7536 University of Hawaii - Manoa 2430**  
 Research in ultraviolet spectroscopy  
*Period Obligations*  
 11/01/78-11/30/83 FY83: \$138,036 TOTAL: \$591,697  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jefferies, J. T. HQ-EZ/Chipman, E. G. 13-Physics

**NSG 7590 University of Hawaii - Manoa 2431**  
 Mars surface unit definition characterization  
*Period Obligations*  
 03/01/79-02/29/84 FY83: \$68,083 TOTAL: \$496,900  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Singer, R. B. HQ-EL/Quaide, W. L. 31-Atmos Sci  
 HQ-EL/French, B. M.

**NSG 7597 University of Hawaii - Manoa 2432**  
 Geophysics and thermal evolution of small planetary objects  
*Period Obligations*  
 05/01/79-10/31/83 FY83: TOTAL: \$45,816  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gaffey, M. J. HQ-EL/Quaide, W. L. 32-Geological Sci

**NSG 7633 University of Hawaii - Manoa 2433**  
 Thermophysics of satellites and asteroids  
*Period Obligations*  
 07/01/79-09/30/82 FY83: TOTAL: \$27,385  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Morrison, D. HQ-EL/Boyce, J. M. 13-Physics

**IDAHO**

**NAS 5-26534 University of Idaho 2434**  
 Design, development, fabrication and testing of a Reed-Solomon (RS) encoder/decoder unit  
*Period Obligations*  
 04/28/81-08/16/84 FY83: \$106,000 TOTAL: \$184,654  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Maki, G. K. GSFC/Morakis, J. C. 45-Elec Engr

**NCA 2-310201 University of Idaho 2435**  
 Training site delineation for TMS/forestry study  
*Period Obligations*  
 08/01/82-02/28/83 FY83: TOTAL: \$14,238  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ulliman, J. J. ARC/Peterson, D. L. 32-Geological Sci  
 ARC/Brass, J. A.

# NASA'S UNIVERSITY PROGRAM ILLINOIS

## ILLINOIS

**NAG 8-427** **Elmhurst College** **2436**  
Investigation of X-ray emission from a close binary star system due to mass transfer using HEAO-1  
*Period* *Obligations*  
01/01/82-06/30/83 FY83: TOTAL: \$6,985  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Morrison, J. P. MSFC/Stone, J. F. 11-Astronomy  
Ganea, I. M.

**NAG 1-347** **Illinois Institute of Technology** **2437**  
Determination of interlaminar fracture toughness in unidirectional composites under dynamic conditions  
*Period* *Obligations*  
05/16/83-05/15/84 FY83: \$88,104 TOTAL: \$88,104  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Daniel, I. M. LARC/Whitcomb, J. D. 46-Mech Engr  
LARC/O'Brien, T. K.

**NAG 1-366** **Illinois Institute of Technology** **2438**  
Experimental studies of impact damage in composite laminates  
*Period* *Obligations*  
05/16/83-05/15/84 FY83: \$80,504 TOTAL: \$80,504  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Daniel, I. M. LARC/Illeg, W. 19-Phys Sci, NEC  
LARC/Eiber, W.

**NAG 2-202** **Illinois Institute of Technology** **2439**  
Error control for reliable digital data transmission and storage system  
*Period* *Obligations*  
10/01/82-09/30/83 FY83: \$15,000 TOTAL: \$15,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Costello, D. J., Jr. ARC/Lim, R. S. 22-Computer Science  
Lin, S. ARC/Stevens, K. G.

**NAG 3-409** **Illinois Institute of Technology** **2440**  
Microstructural analysis of rapidly solidified superalloys  
*Period* *Obligations*  
08/01/83-07/31/85 FY83: \$26,000 TOTAL: \$26,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bloom, T. LERC/Gray, H. R. 47-Materials Engr

**NAG 3-423** **Illinois Institute of Technology** **2441**  
Effects of environment and defects on high strain rate properties of composites  
*Period* *Obligations*  
05/15/83-05/14/84 FY83: \$76,466 TOTAL: \$76,466  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Daniel, I. M. LERC/Chamis, C. C. 41-Aero Engr  
LERC/Irvine, T. B.

**NAG 5-234** **Illinois Institute of Technology** **2442**  
Self-synchronizing outer codes for satellite decoders  
*Period* *Obligations*  
06/15/82-07/14/84 FY83: \$60,000 TOTAL: \$121,423  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Costello, D. J., Jr. GSFC/Miller, W. H. 49-Engr, NEC  
Lin, S. GSFC/Morakis, J. C.

**NSG 1266** **Illinois Institute of Technology** **2443**  
Automated sizing of aerospace structures under multiple constraints  
*Period* *Obligations*  
12/01/75-10/31/81 FY83: TOTAL: \$229,009  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Haftka, R. T. LARC/Adelman, H. M. 41-Aero Engr

**NSG 1591** **Illinois Institute of Technology** **2444**  
Management of turbulent flow structures in boundary layers aimed at drag reduction  
*Period* *Obligations*  
01/15/79-04/14/84 FY83: \$157,386 TOTAL: \$445,661  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nagib, H. M. LARC/Hefner, J. N. 41-Aero Engr  
Corke, T. C. LARC/Anders, J. B.

**NAGW 131** **Loyola University of Chicago** **2445**  
Role of gravity in leaf blade form  
*Period* *Obligations*  
01/01/80-01/31/84 FY83: \$28,862 TOTAL: \$75,418  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hayes, A. B. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAG 1-210** **Northwestern University** **2446**  
Mixed time integration methods for transient thermal analysis of structures  
*Period* *Obligations*  
10/01/81-09/30/82 FY83: TOTAL: \$36,235  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Liu, W. K. LARC/Olsen, G. C. 29-Math/Computer, NEC

**NAG 1-348** **Northwestern University** **2447**  
Data management facilities for numerical applications  
*Period* *Obligations*  
06/01/83-05/31/84 FY83: \$40,755 TOTAL: \$40,755  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Scheuermann, P. LARC/Shipman, F. S. 22-Computer Science  
LARC/Shoosmith, J. N.

**NAG 3-53** **Northwestern University** **2448**  
Mechanisms of lean limit extinction  
*Period* *Obligations*  
04/04/80-04/01/83 FY83: TOTAL: \$89,999  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Law, C. K. LERC/Baker, C. E. 46-Mech Engr

**NAG 3-134** **Northwestern University** **2449**  
High temperature nonlinear constitutive material behavior with thermal fatigue  
*Period* *Obligations*  
11/24/80-11/20/84 FY83: \$166,167 TOTAL: \$298,487  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nemat-nasser, S. LERC/Bill, R. C. 13-Physics  
Weertman, J. R. LERC/Hirschberg, M. H.

**NASA'S UNIVERSITY PROGRAM**  
**ILLINOIS (Continued)**

**NAG 3-345 Northwestern University 2450**  
 Non-involute helical gears: Methods of generation, geometry of surfaces, precision, contract and bending stresses and lubrication  

Period	Obligations
10/02/82-10/01/83	FY83: TOTAL: \$94,791
Prin. Invest.	NASA Tech. Officer CASE Category
Cheng, H. S.	LERC/Zaretsky, E. V. 46-Mech Engr
Litvin, F. L.	

**NAG 3-361 Northwestern University 2451**  
 Lean-limit phenomena  

Period	Obligations
04/04/83-09/30/84	FY83: \$75,000 TOTAL: \$75,000
Prin. Invest.	NASA Tech. Officer CASE Category
Law, C. K.	LERC/Briehl, D. 43-Chem Engr

**NAG 5-181 Northwestern University 2452**  
 Research relative to electroformed X-ray mirrors  

Period	Obligations
05/15/81-11/14/83	FY83: TOTAL: \$62,300
Prin. Invest.	NASA Tech. Officer CASE Category
Ulmer, M. P.	GSFC/Early, L. J. 11-Astronomy

**NAG 8-367 Northwestern University 2453**  
 Research in galactic and extragalactic X-ray astronomy  

Period	Obligations
08/20/80-06/30/83	FY83: TOTAL: \$28,959
Prin. Invest.	NASA Tech. Officer CASE Category
Ulmer, M. P.	MSFC/Stone, J. F. 11-Astronomy

**NAG 8-368 Northwestern University 2454**  
 Observations of Abell clusters discovered as X-ray sources by HEAO-A-1, II  

Period	Obligations
08/15/80-08/15/82	FY83: TOTAL: \$13,747
Prin. Invest.	NASA Tech. Officer CASE Category
Ulmer, M. P.	MSFC/Stone, J. F. 11-Astronomy

**NAG 8-415 Northwestern University 2455**  
 Observations of massive O type runaway stars  

Period	Obligations
07/15/81-07/14/82	FY83: TOTAL: \$1,888
Prin. Invest.	NASA Tech. Officer CASE Category
Taam, R. E.	MSFC/Stone, J. F. 11-Astronomy

**NAG 8-416 Northwestern University 2456**  
 Observations of Abell clusters discovered as X-ray sources by HEAO A-1, III  

Period	Obligations
07/18/81-07/17/82	FY83: TOTAL: \$5,354
Prin. Invest.	NASA Tech. Officer CASE Category
Ulmer, M. P.	MSFC/Stone, J. F. 11-Astronomy

**NAGW 339 Northwestern University 2457**  
 Biotic factors as homeostatic controls of biogeochemical cycles: Geological past and present  

Period	Obligations
06/01/82-12/31/83	FY83: \$59,894 TOTAL: \$95,636
Prin. Invest.	NASA Tech. Officer CASE Category
Lerman, A.	HQ-EB/Geib, D. S. 51-Biological Sci
Garrels, R. M.	HQ-EB/Devincenzi, D. L.

**NAS 5-27238 Northwestern University 2458**  
 SLR/VLBI investigations of regional lithospheric deformation and contemporary plate motions  

Period	Obligations
07/15/82-07/15/84	FY83: \$54,998 TOTAL: \$109,998
Prin. Invest.	NASA Tech. Officer CASE Category
Stein, S.	GSFC/Mead, G. D. 32-Geological Sci
Gordon, R. G.	
Jurdy, D. M.	

**NAS 8-33010 Northwestern University 2459**  
 Research in galactic and extragalactic astronomy HEAO-1  

Period	Obligations
06/01/78-09/30/81	FY83: TOTAL: \$38,346
Prin. Invest.	NASA Tech. Officer CASE Category
Ulmer, M. P.	MSFC/Jones, J. B., Jr. 11-Astronomy

**NAS 8-33354 Northwestern University 2460**  
 Observations of Abell cluster  

Period	Obligations
07/15/79-12/04/81	FY83: TOTAL: \$7,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ulmer, M. P.	MSFC/Jones, J. B., Jr. 11-Astronomy

**NAS 8-33881 Northwestern University 2461**  
 Thermocapillary flows and their stability: Effects of surface layers and contamination  

Period	Obligations
07/11/80-12/30/83	FY83: TOTAL: \$387,185
Prin. Invest.	NASA Tech. Officer CASE Category
Davis, S. H.	MSFC/Yates, I. C., Jr. 19-Phys Sci, NEC
	MSFC/Schofer, C. F.

**NCC 3-13 Northwestern University 2462**  
 Interdisciplinary collaboration in tribology  

Period	Obligations
05/19/80-08/18/82	FY83: TOTAL: \$18,757
Prin. Invest.	NASA Tech. Officer CASE Category
Cheng, H. S.	LERC/Wedeven, L. D. 46-Mech Engr

**NGL 14-007-041 Northwestern University 2463**  
 A study of celestial objects of high angular momenta  

Period	Obligations
02/18/66-10/31/82	FY83: TOTAL: \$265,251
Prin. Invest.	NASA Tech. Officer CASE Category
Huang, S. S.	HQ-EZ/Weiler, E. J. 11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
ILLINOIS (Continued)**

**NSG 3143 Northwestern University 2464**  
Dynamic load and lubrication of spiral bevel gears  
*Period Obligations*  
03/15/77-11/12/83 FY83: TOTAL: \$138,067  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cheng, H. S. LERC/Coy, J. J. 46-Mech Engr  
LERC/Zaretsky, E. V.

**NAS 9-16035 Rush University 2465**  
Response to sudden torques about the ankle man: The myotatic reflex  
*Period Obligations*  
01/17/80-01/31/82 FY83: TOTAL: \$39,932  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Gottlieb, G. L. JSC/Evans, J. S. 59-Life Sci, NEC

**NAGW 344 Southern Illinois University - Carbondale 2466**  
Origin and evolution of osmoregulatory mechanisms in blue-green algae  
*Period Obligations*  
06/15/82-06/14/84 FY83: \$42,000 TOTAL: \$120,613  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Yopp, J. H. HQ-EB/Devincenzi, D. L. 51-Biological Sci

**NCA 2-735201 Southern Illinois University - Carbondale 2467**  
Signal processing methods for gas chromatographic analysis  
*Period Obligations*  
06/01/82-05/31/84 FY83: \$22,489 TOTAL: \$32,406  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Phillips, J. ARC/Carle, G. C. 12-Chemistry

**NCC 3-7 Southern Illinois University - Carbondale 2468**  
Lighting protection for wind turbines study  
*Period Obligations*  
03/01/80-09/30/83 FY83: TOTAL: \$340,924  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Dodd, C. W. LERC/Bankaitis, H. V. 45-Elec Engr  
Smith, J. G. LERC/Finnegan, P. M.  
McCalla, T. M.

**NGT 14-018-800 Southern Illinois University - Carbondale 2469**  
Graduate student researchers program  
*Period Obligations*  
08/01/81-01/31/84 FY83: TOTAL: \$26,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Phillips, J. B. HQ-LB/Carter, C. H. 12-Chemistry

**NAG 2-148 University of Chicago 2470**  
Physiology of the vestibular system  
*Period Obligations*  
12/01/81-11/30/83 FY83: \$51,500 TOTAL: \$104,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Goldberg, J. M. ARC/Daunton, N. G. 51-Biological Sci

**NAG 2-237 University of Chicago 2471**  
The fossil record of periodic extinction  
*Period Obligations*  
05/01/83-11/14/83 FY83: \$10,000 TOTAL: \$10,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Raup, D. M. ARC/Billingham, J. 51-Biological Sci  
Sepkoski, J. J.

**NAG 5-129 University of Chicago 2472**  
Parameterization of cumulus convection and relative effects of clouds  
*Period Obligations*  
12/15/80-07/31/84 FY83: TOTAL: \$111,340  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kuo, H. L. GSFC/Kalnay, E. 31-Atmos Sci

**NAG 5-255 University of Chicago 2473**  
Observations of interstellar carbon  
*Period Obligations*  
07/15/82-01/14/84 FY83: \$8,800 TOTAL: \$9,800  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hobbs, L. M. GSFC/Kondo, Y. 11-Astronomy  
York, D. G.

**NAG 5-286 University of Chicago 2474**  
Absorption measure of gas in galactic holos  
*Period Obligations*  
01/01/83-12/31/83 FY83: \$21,453 TOTAL: \$21,453  
*Prin. Invest. NASA Tech. Officer CASE Category*  
York, D. G. GSFC/Kondo, Y. 12-Chemistry

**NAG 5-308 University of Chicago 2475**  
Cosmic ray composition investigations  
*Period Obligations*  
04/01/83-03/31/84 FY83: \$57,000 TOTAL: \$57,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wiedenbeck, M. E. GSFC/Wales, R. O. 13-Physics

**NAG 5-318 University of Chicago 2476**  
Ultracold bolometers for infrared detection from orbiting telescopes  
*Period Obligations*  
05/01/83-05/14/84 FY83: \$50,662 TOTAL: \$50,662  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Harper, D. A. GSFC/Moseley, S. H. 19-Phys Sci, NEC

**NAG 9-47 University of Chicago 2477**  
Mineralogy and chemistry of planets and meteorites  
*Period Obligations*  
02/01/83-01/31/84 FY83: \$130,000 TOTAL: \$130,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Smith, J. V. JSC/Dietrich, J. W. 13-Physics

**NAG 9-51 University of Chicago 2478**  
Isotope studies of the Moon and meteorites  
*Period Obligations*  
02/01/83-01/31/84 FY83: \$200,000 TOTAL: \$200,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Clayton, R. N. JSC/Dietrich, J. W. 11-Astronomy  
Mayeda, T. K.  
Hutcheon, I. D.

**NASA'S UNIVERSITY PROGRAM  
ILLINOIS (Continued)**

**NAG 9-52 University of Chicago 2479**  
Age, origin, and composition of meteorites  
*Period Obligations*  
03/01/83-01/31/84 FY83: \$187,000 TOTAL: \$187,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Anders, E. JSC/Dietrich, J. W. 32-Geological Sci

**NAG 9-54 University of Chicago 2480**  
Chemical aspects of the origin of the solar  
*Period Obligations*  
04/01/83-03/31/84 FY83: \$160,000 TOTAL: \$160,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Grossman, L. JSC/Dietrich, J. W. 32-Geological Sci

**NAGW 4 University of Chicago 2481**  
Submillimeter astronomy at the NASA University of Hawaii  
3-meter infrared telescope facility  
*Period Obligations*  
10/01/79-09/30/83 FY83: TOTAL: \$152,763  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hildebrand, R. H. HQ-EL/Brunk, W. E. 11-Astronomy  
HQ-EL/Brinton, H. C.

**NAGW 123 University of Chicago 2482**  
Supernovae as cosmological distance indicators  
*Period Obligations*  
12/01/80-10/31/83 FY83: \$28,385 TOTAL: \$55,385  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Arnett, W. D. HQ-EZ/Kaluzienski, L. J. 11-Astronomy  
HQ-EZ/Opp, A. G.

**NAGW 405 University of Chicago 2483**  
Copernicus data analysis and interpretation  
*Period Obligations*  
12/01/82-11/30/83 FY83: \$111,000 TOTAL: \$111,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
York, D. G. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAGW 423 University of Chicago 2484**  
Alpha particle technique for chemical analysis of planetary  
surfaces and atmospheres  
*Period Obligations*  
02/01/83-01/31/84 FY83: \$53,346 TOTAL: \$53,346  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ferrkevich, A. L. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 460 University of Chicago 2485**  
Relationship between phycoethrhm fluorescence and productivity  
in marine synechococcus  
*Period Obligations*  
05/15/83-05/14/84 FY83: \$30,979 TOTAL: \$30,979  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Alberte, R. S. HQ-EE/Esaias, W. E. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAS 2-11126 University of Chicago 2486**  
Pioneer 10/11 charged particle instrument data reduction and  
analysis  
*Period Obligations*  
10/01/81-09/30/83 FY83: \$299,928 TOTAL: \$539,928  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Simpson, J. A. ARC/Fimmel, R. O. 42-Astro Engr  
McKibben, R. B. ARC/Leidich, C. A.  
Tuzzolino, A. J.

**NAS 5-20674 University of Chicago 2487**  
Quasi ray electrons experiment for ISEE-C heliocentric orbit  
*Period Obligations*  
10/24/74-12/31/81 FY83: TOTAL: \$1,329,501  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Meyer, P. GSFC/Wales, R. O. 13-Physics

**NAS 5-24430 University of Chicago 2488**  
Design, develop, fabricate and testing of a scientific instrument  
for an experiment to measure cosmic ray isotopes  
*Period Obligations*  
12/01/77-09/30/84 FY83: \$210,479 TOTAL: \$1,863,761  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Simpson, J. A. GSFC/Davis, M. A. 13-Physics

**NAS 5-25731 University of Chicago 2489**  
Interplanetary monitoring platform-J data reduction and analysis  
*Period Obligations*  
12/01/79-09/30/84 FY83: \$105,000 TOTAL: \$432,885  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Simpson, J. A. GSFC/Wales, R. O. 11-Astronomy

**NAS 5-26680 University of Chicago 2490**  
International Sun-Earth Explorer cosmic ray electron experiment  
*Period Obligations*  
06/01/81-10/31/84 FY83: \$175,677 TOTAL: \$418,435  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Meyer, P. GSFC/Wales, R. O. 11-Astronomy

**NAS 8-32828 University of Chicago 2491**  
Elemental composition and energy spectra of cosmic ray nuclei  
*Period Obligations*  
10/28/77-08/31/85 FY83: \$2,024,575 TOTAL: \$8,379,103  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Myer, P. MSFC/Adams, R. 31-Atmos Sci  
Muller, D. MSFC/Ise, R.

**NAS 8-34770 University of Chicago 2492**  
Analysis of Doppler lidar wind measurements  
*Period Obligations*  
05/19/82-05/18/84 FY83: \$39,264 TOTAL: \$69,053  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Srivastava, R. C. MSFC/Fitzjarrald, D. E. 31-Atmos Sci  
MSFC/Kaufman, J. W.

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**NCA 2-108101**      **University of Chicago**      **2493**  
Numerical experiments in the formation of galaxies and clusters of galaxies

Period	Obligations
06/02/81-12/01/83	FY83: TOTAL: \$19,800
Prin. Invest. Miller, R. H.	NASA Tech. Officer ARC/Smith, B. F. CASE Category 11-Astronomy

**NGL 14-001-169**      **University of Chicago**      **2500**  
Lunar sample analysis

Period	Obligations
01/19/71-05/31/83	FY83: \$3,800 TOTAL: \$1,382,360
Prin. Invest. Clayton, R. N.	NASA Tech. Officer JSC/Dietrich, J. W. CASE Category 12-Chemistry

**NCA 2-108201**      **University of Chicago**      **2494**  
Resonant grid submillimeter filters

Period	Obligations
05/01/82-12/31/83	FY83: \$7,600 TOTAL: \$18,635
Prin. Invest. Hildebrand, R. H. Jaffe, D. Dragovan, M.	NASA Tech. Officer ARC/Roellig, T. P. CASE Category 11-Astronomy

**NGL 14-001-171**      **University of Chicago**      **2501**  
Lunar sample analysis

Period	Obligations
01/19/71-05/31/83	FY83: TOTAL: \$943,684
Prin. Invest. Smith, J. V.	NASA Tech. Officer JSC/Dietrich, J. W. CASE Category 13-Physics

**NCC 2-265**      **University of Chicago**      **2495**  
Numerical experimental on the dynamics of galaxies

Period	Obligations
08/01/83-07/31/84	FY83: \$16,662 TOTAL: \$16,662
Prin. Invest. Miller, R. H.	NASA Tech. Officer ARC/Smith, B. F. CASE Category 11-Astronomy

**NGL 14-001-258**      **University of Chicago**      **2502**  
Advanced technical developments in support of scientific experiments in space

Period	Obligations
06/15/73-04/30/84	FY83: \$200,000 TOTAL: \$2,495,996
Prin. Invest. Meyer, P. Muller, D. Simpson, J. A.	NASA Tech. Officer HQ-E/Rosendhal, J. D. CASE Category 99-Multi-Discip

**NGL 14-001-001**      **University of Chicago**      **2496**  
Investigation of effects of solar wind in interplanetary space

Period	Obligations
08/01/60-01/31/84	FY83: \$115,000 TOTAL: \$1,560,685
Prin. Invest. Parker, E. N.	NASA Tech. Officer HQ-EZ/Kaluzienski, L. J. CASE Category 11-Astronomy

**NGR 14-001-008**      **University of Chicago**      **2503**  
Meteorological interpretation of satellite radiation data

Period	Obligations
09/01/70-10/31/83	FY83: \$6,000 TOTAL: \$1,690,000
Prin. Invest. Fujita, T. T.	NASA Tech. Officer HQ-EE/Dodge, J. C. CASE Category 31-Atmos Sci

**NGL 14-001-005**      **University of Chicago**      **2497**  
High altitude balloon investigations on composition, energy spectrum and intensity of primary cosmic radiation at high and intermediate geomagnetic latitudes

Period	Obligations
05/01/61-12/31/83	FY83: \$415,000 TOTAL: \$7,490,258
Prin. Invest. Meyer, P.	NASA Tech. Officer HQ-EZ/Opp, A. G. CASE Category 11-Astronomy

**NGR 14-001-135**      **University of Chicago**      **2504**  
Feasibility of the alpha scattering technique for Martian surface analysis

Period	Obligations
02/25/69-08/31/82	FY83: TOTAL: \$909,976
Prin. Invest. Turkevich, A. L.	NASA Tech. Officer HQ-EL/Taylor, L. CASE Category 32-Geological Sci

**NGL 14-001-006**      **University of Chicago**      **2498**  
Experimental and theoretical studies of energetic particles and electrodynamical processes in interplanetary space and in vicinity of planets

Period	Obligations
08/01/61-12/31/84	FY83: \$430,000 TOTAL: \$8,159,396
Prin. Invest. Simpson, J. A.	NASA Tech. Officer HQ-EZ/Opp, A. G. CASE Category 11-Astronomy

**NGR 14-001-147**      **University of Chicago**      **2505**  
Interferometric high-resolution spectroscopy of optical interstellar lines

Period	Obligations
03/18/70-06/30/84	FY83: \$45,028 TOTAL: \$447,491
Prin. Invest. Hobbs, L. M.	NASA Tech. Officer HQ-EZ/Weiler, E. J. CASE Category 11-Astronomy

**NGL 14-001-010**      **University of Chicago**      **2499**  
Research and investigation of origin, age and composition of meteorites

Period	Obligations
03/11/63-02/28/84	FY83: TOTAL: \$2,313,503
Prin. Invest. Anders, E.	NASA Tech. Officer HQ-EL/Taylor, L. A. CASE Category 32-Geological Sci

**NGR 14-001-227**      **University of Chicago**      **2506**  
Photometry of galactic and extragalactic far infrared sources using the 91.5 cm airborne infrared telescope

Period	Obligations
02/27/73-11/30/83	FY83: \$134,955 TOTAL: \$1,141,031
Prin. Invest. Harper, D. A., Jr.	NASA Tech. Officer ARC/Haughney, L. C. CASE Category 11-Astronomy



<b>NGR 14-001-249</b>	<b>University of Chicago</b>	<b>2507</b>
Physical properties of solar nebula as deduced from chondrites		
<i>Period</i>	<i>Obligations</i>	
05/14/73-03/31/84	FY83:	TOTAL: \$1,073,473
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Grossman, L.	HQ-EL/French, B. M.	32-Geological Sci
	HQ-EL/Quaide, W. L.	

<b>VSG 2057</b>	<b>University of Chicago</b>	<b>2508</b>
<b>Study of sensitive detection system for far infrared astronomy</b>		
<i>Period</i>	<i>Obligations</i>	
12/01/74-10/31/83	FY83: \$102,722	TOTAL: \$493,688
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hildebrand, R. H.	ARC/Haughney, L. C.	11-Astronomy

<b>NSG 7212</b>	<b>University of Chicago</b>	<b>2509</b>
<b>Nuclear astrophysics effects in meteoritic and lunar material</b>		
<i>Period</i>	<i>Obligations</i>	
03/01/76-02/29/84	FY83: \$35,000	TOTAL: \$345,246
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schramm, D. N.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

<b>NSG 7303</b>	<b>University of Chicago</b>	<b>2510</b>
Applications of electron microscopy in molecular exobiology and extraterrestrial research		
<i>Period</i>	<i>Obligations</i>	
12/01/76-12/31/83	FY83:	TOTAL: \$105,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fernandez, H.	HQ-EB/Soffen, G. A.	51-Biological Sci

<b>NSG 7464</b>	<b>University of Chicago</b>	<b>2511</b>
Studies of the energy spectrum of cosmic ray electrons		
<i>Period</i>	<i>Obligations</i>	
07/01/78-10/31/83	FY83: \$60,000	TOTAL: \$360,332
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Muller, D.	HQ-EZ/Kaluziensi, L. J.	31-Atmos Sci
	HQ-EZ/Opp, A. G.	

<b>NAG 3-48</b>	<b>University of Illinois - Chicago Circle</b>	<b>2512</b>
Synthesis and optimization of spiral bevel gear tooth surfaces		
<i>Period</i>	<i>Obligations</i>	
03/21/80-11/01/83	FY83:	TOTAL: \$131,884
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Litvin, F. L.	LERC/Coy, J. J.	46-Mech Engr

<b>NAG 3-136</b>		<b>University of Illinois - Chicago Circle</b>	<b>2513</b>
Preparation of a NASA reference publications entitled 'Theory of Gearing'			
<i>Period</i>		<i>Obligations</i>	
12/08/80-12/06/83	FY83:		TOTAL: \$50,000
<i>Prin. Invest</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
Litvin, F. L.	LERC/Coy, J. J.		46-Mech Engr

NAG 1-76		University of Illinois, Urbana	2514
The study of wake pressure recovery as a factor in airfoil design			
Period		Obligations	
06/15/80-09/30/82	FY83:		TOTAL: \$91,142
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>		<i>CASE Category</i>
Ormsbee, A. I.	LARC/Somers, D. M.		41-Aero Engr

<b>NAG 1-138</b>	<b>University of Illinois, Urbana</b>	<b>2515</b>
<b>Automate the management of software production systems</b>		
<i>Period</i>	<i>Obligations</i>	
01/21/81-01/20/84	FY83: \$95,529	TOTAL: \$224,673
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Campbell, R. H.	LARC/Senn, E. H.	22-Computer Science
Ardis, M. A.	LARC/Voigt, S. J.	

<b>NAG 1-286</b>	<b>University of Illinois, Urbana</b>	<b>2516</b>
<b>Analyses of interlaminar fracture tests and delamination in composite materials</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/21/82-01/20/84</b>	<b>FY83: \$68,321</b>	<b>TOTAL: \$101,504</b>
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
<b>Wang, S. S.</b>	<b>LARC/Johnston, N. J.</b>	<b>47-Materials Engr</b>
	<b>LARC/O'Brien, T. K.</b>	

<b>NAG 1-288</b>	<b>University of Illinois, Urbana</b>	<b>2517</b>
Multilevel semantic analysis and problem-solving in the flight domain		
<i>Period</i>	<i>Obligations</i>	
07/11/82-09/30/83	FY83: \$60,000	TOTAL: \$105,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chien, R. T.	LARC/Samms, K. H.	
	29-Math/Computer, NEC	
	LARC/Morello, S. A.	

<b>NAG 2-144</b>	<b>University of Illinois, Urbana</b>	<b>2518</b>
Investigation of the heat transfer to the effluent gas		
<i>Period</i>	<i>Obligations</i>	
10/01/81-06/30/82	FY83:	TOTAL: \$15,540
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chato, J. C.	ARC/Kittel, P.	46-Mech Engr

<b>NAG 2-169</b>	<b>University of Illinois, Urbana</b>	<b>2519</b>
<b>Investigation of the basis of subjective ratings of mental workload</b>		
<i>Period</i>	<i>Obligations</i>	
03/15/82-11/14/83	FY83: \$20,000	TOTAL: \$39,817
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wickens, C. D.	ARC/Hart, S. G.	69-Psych, NEC

<b>NAG 2-219</b>	<b>University of Illinois, Urbana</b>	<b>2520</b>
<b>Optimization of cooled shields in thermal insulations</b>		
<i>Period</i>	<i>Obligations</i>	
01/01/83-01/31/84	FY83: \$19,421	TOTAL: \$19,421
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chato, J. C.	ARC/Kittel, P.	46-Mech Engr
	ARC/Lum, H.	

<b>NAG 3-60</b>	<b>University of Illinois, Urbana</b>	<b>2521</b>
The mechanisms of flame holding in the wake of a bluff body		
<i>Period</i>		<i>Obligations</i>
05/21/80-08/18/83	FY83:	TOTAL: \$90,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Strehlow, R. A.	LERC/Baker, C. E.	41-Aero Engr

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**NAG 3-153**                      **University of Illinois, Urbana**                      **2522**  
Lubricating effectiveness of solid lubricant additives in mineral oils  
*Period*                                      *Obligations*  
01/15/81-01/22/84                      FY83:                      TOTAL: \$72,063  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Cusano, C.                      LERC/Fusaro, R. L.                      46-Mech Engr

**NAG 3-325**                      **University of Illinois, Urbana**                      **2523**  
A study of reductions of Cr in Ni-base superalloys through element substitution and rapid solidification processing  
*Period*                                      *Obligations*  
09/15/82-09/14/84                      FY83:                      TOTAL: \$167,875  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Fraser, H. L.                      LERC/Dreshfield, R. L.                      47-Materials Engr  
Muddle, B. C.

**NAG 3-418**                      **University of Illinois, Urbana**                      **2524**  
Study of microstrip antenna arrays and related problems  
*Period*                                      *Obligations*  
05/21/83-05/20/84                      FY83: \$53,477                      TOTAL: \$53,477  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Lo, Y. T.                      LERC/Lee, R. Q.                      45-Elec Engr

**NAG 3-419**                      **University of Illinois, Urbana**                      **2525**  
Selected studies of reflector antenna systems  
*Period*                                      *Obligations*  
05/21/83-05/20/84                      FY83: \$44,944                      TOTAL: \$44,944  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Lee, S. W.                      LERC/Acosta, R. J.                      45-Elec Engr

**NAG 3-420**                      **University of Illinois, Urbana**                      **2526**  
Investigation of monolithic microwave integrated circuit modules radiators for 20-30GHz and above  
*Period*                                      *Obligations*  
05/21/83-05/20/84                      FY83: \$60,005                      TOTAL: \$60,005  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Mittra, R.                      LERC/Smetana, J.                      45-Elec Engr

**NAG 3-465**                      **University of Illinois, Urbana**                      **2527**  
Multiaxial cyclic deformation and fatigue  
*Period*                                      *Obligations*  
08/20/83-12/19/84                      FY83: \$85,045                      TOTAL: \$85,045  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Socie, D. F.                      LERC/Leese, G. E.                      47-Materials Engr  
   LERC/Halford, G. R.

**NAG 3-475**                      **University of Illinois, Urbana**                      **2528**  
Numerical methods for analyzing electromagnetic scattering  
*Period*                                      *Obligations*  
09/25/83-02/25/84                      FY83: \$22,385                      TOTAL: \$22,385  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Lee, S. W.                      LERC/Cho, Y. C.                      45-Elec Engr  
Lo, Y. T.

**NAG 5-132**                      **University of Illinois, Urbana**                      **2529**  
Tropical cyclone track and genesis forecasting  
*Period*                                      *Obligations*  
01/01/81-06/30/82                      FY83:                      TOTAL: \$34,347  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Kidder, S. Q.                      GSFC/Rodgers, E. B.                      31-Atmos Sci

**NAG 5-171**                      **University of Illinois, Urbana**                      **2530**  
Observation of central stars of large planetary nebulae  
*Period*                                      *Obligations*  
05/01/81-07/31/84                      FY83: \$26,075                      TOTAL: \$34,925  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Kaler, J. B.                      GSFC/Kondo, Y.                      11-Astronomy  
Feibelman, W. A.

**NAG 5-362**                      **University of Illinois, Urbana**                      **2531**  
High star formation ratio irregular galaxies and the initial mass function of massive stars  
*Period*                                      *Obligations*  
08/15/83-08/14/84                      FY83: \$10,497                      TOTAL: \$10,497  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Gallagher, J. S.                      GSFC/Kondo, Y.                      11-Astronomy  
Hunter, D. A.  
Lamb, S. A.

**NAG 8-310**                      **University of Illinois, Urbana**                      **2532**  
Investigation of X-ray spectra of accreting non-magnetic degenerate dwarfs  
*Period*                                      *Obligations*  
03/01/80-08/31/82                      FY83:                      TOTAL: \$6,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Lamb, D. Q.                      MSFC/Stone, J. F.                      11-Astronomy  
Mason, K. O.  
Brandnardi, G.

**NAG 8-409**                      **University of Illinois, Urbana**                      **2533**  
To obtain a second epoch observation of Cas A  
*Period*                                      *Obligations*  
07/28/81-06/30/83                      FY83:                      TOTAL: \$10,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Dickel, J. R.                      MSFC/Stone, J. F.                      11-Astronomy  
Cowif, L. L.  
Fabin, A. C.

**NAS 3-22666**                      **University of Illinois, Urbana**                      **2534**  
Use of a laser Doppler velocimeter in flammability tube  
*Period*                                      *Obligations*  
01/21/81-09/02/82                      FY83:                      TOTAL: \$35,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Strehlow, R. A.                      LERC/Dewitt, R. L.                      45-Elec Engr

**NAS 3-23770**                      **University of Illinois, Urbana**                      **2535**  
Flammability limits of gases under low gravity conditions  
*Period*                                      *Obligations*  
09/30/82-12/15/83                      FY83:                      TOTAL: \$43,095  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Strehlow, R. A.                      LERC/Nussle, R. C.                      19-Phys Sci, NEC  
   LERC/Labus, T. L.

**NAS 5-26405**                      **University of Illinois, Urbana**                      **2536**  
Design and application of parallel processors  
*Period*                                      *Obligations*  
12/12/80-12/11/85                      FY83: \$100,000                      TOTAL: \$266,725  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Slotnick, D. L.                      GSFC/Schaefer, D. H.                      22-Computer Science

**NASA'S UNIVERSITY PROGRAM**  
**ILLINOIS (Continued)**

**NAS 8-34902 University of Illinois, Urbana 2537**  
 Application of satellite data in variational objective analysis  
*Period Obligations*  
 08/27/82-08/26/85 FY83: \$152,000 TOTAL: \$228,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Achtemeier, G. MSFC/Fichil, G. A. 31-Atmos Sci  
 MSFC/Kaufman, J.

**NAS 9-15328 University of Illinois, Urbana 2538**  
 Definition of Spacelab I experiment on effects of prolonged weightlessness on the humoral response in humans  
*Period Obligations*  
 07/15/77-12/01/83 FY83: TOTAL: \$59,268  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Voss, E. W. JSC/Peck, E. E. 59-Life Sci, NEC

**NASW 3646 University of Illinois, Urbana 2539**  
 Support of the international middle atmosphere program management  
*Period Obligations*  
 06/14/82-06/15/83 FY83: TOTAL: \$21,275  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Liu, C. H. HQ-EE/Lynch, J. T. 13-Physics  
 HQ-EE/Schmerling, E. R.

**NCC 1-52 University of Illinois, Urbana 2540**  
 Multilevel semantic analysis and problem-solving in the flight domain  
*Period Obligations*  
 07/11/81-07/10/82 FY83: TOTAL: \$100,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Chien, R. T. LARC/Hankins, W. W. 29-Math/Computer, NEC  
 LARC/Pennington, J. E.

**NCC 2-233 University of Illinois, Urbana 2541**  
 Workload book assessment of operator workload in engineering systems  
*Period Obligations*  
 02/01/83-09/30/83 FY83: \$16,428 TOTAL: \$16,428  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gopher, D. ARC/Hart, S. G. 99-Multi-Discip  
 Donchin, E.

**NGR 14-005-176 University of Illinois, Urbana 2542**  
 Investigation of the atmosphere of Jupiter by studying the ammonia feature at a wavelength of 1.26cm  
*Period Obligations*  
 05/22/72-06/30/83 FY83: TOTAL: \$76,367  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Dickel, J. R. HQ-EL/Brunk, W. E. 11-Astronomy

**NGR 14-005-181 University of Illinois, Urbana 2543**  
 Rocket studies of the lower ionosphere  
*Period Obligations*  
 08/01/71-10/31/83 FY83: \$350,000 TOTAL: \$5,234,817  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bowhill, S. A. GSFC/Early, L. J. 19-Phys Sci, NEC  
 WFC/Pless, R. H.

**NSG 1471 University of Illinois, Urbana 2544**  
 A project to investigate mechanisms and methodologies for the design and construction of reliable, distributed programs in real-time environments  
*Period Obligations*  
 11/15/77-10/31/83 FY83: TOTAL: \$418,178  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Campbell, R. H. LARC/Foudriat, E. C. 21-Mathematics  
 LARC/Orlando, N. E.

**NSG 1547 University of Illinois, Urbana 2545**  
 An experimental investigation of 235UF6 fission produced plasmas  
*Period Obligations*  
 07/01/78-12/31/81 FY83: TOTAL: \$120,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Miley, G. H. LARC/Jalufka, N. W. 13-Physics

**NSG 1609 University of Illinois, Urbana 2546**  
 Lasing characteristics of gas mixtures involving UF6 application to nuclear pumping of lasers  
*Period Obligations*  
 04/15/79-07/31/83 FY83: TOTAL: \$156,832  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Verdeyen, J. T. LARC/Deyoung, R. J. 13-Physics  
 Eden, J. G. LARC/Conway, E. J.

**NSG 5049 University of Illinois, Urbana 2547**  
 Effects of atmospheric refraction and turbulence on the accuracy of laser systems  
*Period Obligations*  
 02/01/75-06/30/84 FY83: \$53,866 TOTAL: \$346,368  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gardner, C. S. GSFC/Abshire, J. B. 45-Elec Engr  
 Swenson, G. W. GSFC/Degnan, J. J.

**NSG 5319 University of Illinois, Urbana 2548**  
 Theoretical studies of the solar corona, Solar Maximum Mission  
*Period Obligations*  
 01/15/79-01/14/83 FY83: TOTAL: \$41,568  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Mouschovias, T. C. GSFC/Wende, C. 31-Atmos Sci

**NSG 7044 University of Illinois, Urbana 2549**  
 Evolution of the cell and the translation process  
*Period Obligations*  
 06/01/74-07/31/84 FY83: \$99,200 TOTAL: \$665,820  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Woese, C. R. HQ-EB/Devincenzi, D. L. 12-Chemistry

**NSG 7506 University of Illinois, Urbana 2550**  
 Studies of upper-atmosphere motions by UHF  
*Period Obligations*  
 10/01/78-11/30/83 FY83: \$90,000 TOTAL: \$411,798  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bowhill, S. A. HQ-EE/Hilsenrath, E. 31-Atmos Sci  
 HQ-EE/Watson, R. T.

**NASA'S UNIVERSITY PROGRAM**  
**ILLINOIS (Continued)**

**NSG 7653**                      **University of Illinois, Urbana**                      **2551**  
Fundamental studies in theoretical X-ray astronomy

Period	Obligations	
09/01/79-11/30/83	FY83: \$105,000	TOTAL: \$480,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lamb, D. Q.	HQ-EZ/Kaluzienski, L.	11-Astronomy
Pethick, C. J.	HQ-EZ/Opp, A. G.	
Pines, D.		

**NAG 1-42**                      **Western Illinois University**                      **2552**  
Research in numerical algorithms for the finite element machine

Period	Obligations	
03/01/80-02/28/83	FY83:	TOTAL: \$40,050
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McBride, W. E.	LARC/Peebles, S. W.	21-Mathematics

**INDIANA**

**NAG 5-182**                      **Indiana University - Bloomington**                      **2553**  
Studies of the ultraviolet spectra of carbon stars

Period	Obligations	
05/15/81-08/31/84	FY83: \$16,253	TOTAL: \$33,619
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnson, H. R.	GSFC/Kondo, Y.	11-Astronomy
O'Brien, G. T.		

**NAG 5-198**                      **Indiana University - Bloomington**                      **2554**  
Quasi-simultaneous synoptic observations of selected objects in several wave-length regions

Period	Obligations	
08/01/81-07/31/84	FY83: \$6,000	TOTAL: \$9,350
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mufson, S. L.	GSFC/Kondo, Y.	11-Astronomy
Urry, C. M.		

**NAG 5-347**                      **Indiana University - Bloomington**                      **2555**  
A study of the ultraviolet spectra of selected cool giant stars

Period	Obligations	
07/15/83-01/14/84	FY83: \$6,900	TOTAL: \$6,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Honeycutt, R. K.	GSFC/Kondo, Y.	11-Astronomy
Steiman-Cameron, T. Y.		

**NAG 8-331**                      **Indiana University - Bloomington**                      **2556**  
Investigation of the X-ray and optical properties of S-type Markarian galaxies: Simultaneous photometric and spectroscopic observations of X Persei

Period	Obligations	
02/15/80-02/14/82	FY83:	TOTAL: \$13,950
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mufson, S. L.	MSFC/Stone, J. F.	11-Astronomy
Hutter, D. J.		

**NAG 8-362**                      **Indiana University - Bloomington**                      **2557**  
High Energy Astronomical Observatory-A1 observations of AM Herculis and related objects

Period	Obligations	
08/20/80-08/20/83	FY83:	TOTAL: \$8,532
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Durisen, R. H.	MSFC/Stone, J. F.	11-Astronomy
Imamura, J. N.		

**NAG 8-365**                      **Indiana University - Bloomington**                      **2558**  
A search for Compton scattered X-rays in selected compact extragalactic objects

Period	Obligations	
08/20/80-08/18/82	FY83:	TOTAL: \$8,105
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mufson, S. L.	MSFC/Stone, J. F.	11-Astronomy

**NAG 8-396**                      **Indiana University - Bloomington**                      **2559**  
Coordinated X-ray and optical observations of Markarian 180, and the search for X-ray emission from S-type Markarian galaxies

Period	Obligations	
06/15/81-06/14/83	FY83:	TOTAL: \$14,348
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mufson, S. L.	MSFC/Stone, J. F.	11-Astronomy
Wisniewski, W. Z.		

**NAGW 60**                      **Indiana University - Bloomington**                      **2560**  
The role of gravity perception in the establishment of the dorsal ventral axis of the amphibian egg

Period	Obligations	
06/01/80-11/30/84	FY83: \$90,000	TOTAL: \$230,433
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Malacinski, G. M.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NCA 2-335001**                      **Indiana University - Bloomington**                      **2561**  
The role of the sympathoadrenal system during exposure to heat and cold

Period	Obligations	
03/01/80-05/31/82	FY83:	TOTAL: \$39,482
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Elizondo, R.	ARC/Greenleaf, J. E.	56-Medical Sciences

**NCA 2-335101**                      **Indiana University - Bloomington**                      **2562**  
The evolution of Saturn's rings due to erosion mechanisms

Period	Obligations	
06/01/81-06/01/83	FY83:	TOTAL: \$8,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Weber, N. V.	ARC/Cuzzi, J. N.	11-Astronomy

**NGR 15-003-118**                      **Indiana University - Bloomington**                      **2563**  
Application of ultra-high sensitivity isotope ratio mass spectrometry to organic geochemistry and cosmochemistry

Period	Obligations	
06/20/72-11/30/83	FY83: \$87,073	TOTAL: \$910,039
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hayes, J. M.	HQ-EB/Devincenzi, D. L.	12-Chemistry

**NASA'S UNIVERSITY PROGRAM**  
**INDIANA (Continued)**

**NGT 15-003-800 Indiana University - Bloomington 2564**  
 Graduate student researchers program  
*Period* *Obligations*  
 09/01/82-07/31/84 FY83: \$15,000 TOTAL: \$28,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Langhoff, P. W. HQ-LB/Owens, F. C. 12-Chemistry

**NSG 9077 Indiana University - Bloomington 2565**  
 Characterization and evolution of Apollo 15 drill core soils, and the origin of green glass vitrophyres  
*Period* *Obligations*  
 07/15/79-02/15/84 FY83: \$28,200 TOTAL: \$131,900  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Basu, A. JSC/Dietrich, J. W. 32-Geological Sci

**NSG 3183 Indiana Univ.-Purdue U. at Indianapolis 2566**  
 Numerical solution of the compressible boundary layer equations with viscous-inviscid interaction  
*Period* *Obligations*  
 01/16/78-10/01/83 FY83: TOTAL: \$140,874  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bodonyi, R. J. LERC/Sockol, P. M. 41-Aero Engr

**NSG 3294 Indiana Univ.-Purdue U. at Indianapolis 2567**  
 Finite element analysis of transonic flow through a cascade of airfoils using a self-adaptive mesh  
*Period* *Obligations*  
 08/01/79-10/30/82 FY83: TOTAL: \$203,497  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Ecer, A. LERC/Chima, R. U. 41-Aero Engr  
 Akay, H. LERC/Sockol, P. M.

**NAG 1-58 Purdue University 2568**  
 A study of method to predict and measure the transmission of sound through the walls of light aircraft  
*Period* *Obligations*  
 04/01/80-03/31/84 FY83: \$89,517 TOTAL: \$359,783  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Crocker, M. J. LARC/Mixson, J. S. 41-Aero Engr

**NAG 1-116 Purdue University 2569**  
 Multiple level techniques for computational fluid dynamics  
*Period* *Obligations*  
 11/12/80-01/31/84 FY83: \$36,108 TOTAL: \$108,499  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 McCarthy, D. R. LARC/Swanson, R. C. 41-Aero Engr  
 LARC/Thames, F. C.

**NAG 1-157 Purdue University 2570**  
 Interactive aircraft flight control and aeroelastic stabilization  
*Period* *Obligations*  
 05/01/81-10/31/83 FY83: \$46,330 TOTAL: \$117,141  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Weisshaar, T. A. LARC/Newsom, J. R. 41-Aero Engr  
 Schmidt, D. K.

**NAG 1-222 Purdue University 2571**  
 Modeling of contact behavior and damage in low velocity impact of composite laminates under initial stress  
*Period* *Obligations*  
 11/01/81-10/31/83 FY83: \$70,000 TOTAL: \$150,038  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Sun, C. T. LARC/Tilg, W. 19-Phys Sci, NEC  
 LARC/Kennedy, J. M.

**NAG 1-231 Purdue University 2572**  
 Constraint effects on fatigue crack propagation  
*Period* *Obligations*  
 01/01/82-12/31/83 FY83: TOTAL: \$53,873  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hillberry, B. M. LARC/Johnson, W. S. 46-Mech Engr  
 LARC/Newman, J. C., Jr.

**NAG 1-254 Purdue University 2573**  
 Enhanced manual controllability via active control of aeroelastic vehicles  
*Period* *Obligations*  
 02/01/82-01/31/84 FY83: \$42,852 TOTAL: \$96,352  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Schmidt, D. K. LARC/Grantham, W. D. 41-Aero Engr  
 Yang, H. T. LARC/Elliott, J. R.

**NAG 1-305 Purdue University 2574**  
 Dynamics and control of forward-swept-wing aircraft  
*Period* *Obligations*  
 11/01/82-12/31/83 FY83: \$38,920 TOTAL: \$38,920  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Schmidt, D. K. LARC/Newsom, J. R. 41-Aero Engr  
 Weisshaar, T. A.

**NAG 1-321 Purdue University 2575**  
 Three-dimensional measurements of fatigue crack closure  
*Period* *Obligations*  
 01/01/83-06/30/84 FY83: \$40,061 TOTAL: \$40,061  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Grandt, A. F., Jr. LARC/Newman, J. C., Jr.  
 LARC/Davidson, J. R. 47-Materials Engr

**NAG 1-372 Purdue University 2576**  
 Computational unsteady aerodynamics and aeroelasticity  
*Period* *Obligations*  
 06/07/83-09/06/85 FY83: \$75,000 TOTAL: \$75,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Yang, H. T. LARC/Edwards, J. W. 41-Aero Engr  
 LARC/Seidel, D. A.

**NAG 1-381 Purdue University 2577**  
 Fabrication and analysis of stitched graphite/epoxy laminates  
*Period* *Obligations*  
 07/01/83-12/31/83 FY83: \$11,955 TOTAL: \$11,955  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Sun, C. T. LARC/Williams, J. G. 41-Aero Engr  
 LARC/Starnes, J. H., Jr.

**NASA'S UNIVERSITY PROGRAM**  
**INDIANA (Continued)**

**NAG 2-228** **Purdue University** **2578**  
Pilot-in-the-loop quadratic synthesis of flight director control laws  
*Period* *Obligations*  
04/01/83-03/31/84 FY83: \$37,000 TOTAL: \$37,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schmidt, D. K. ARC/Duke, E. L. 41-Aero Engr  
ARC/Petersen, K. L.

**NAG 3-17** **Purdue University** **2579**  
Sensor failure detection and control system accommodation  
*Period* *Obligations*  
02/01/80-06/30/83 FY83: TOTAL: \$146,720  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Leininger, G. G. LERC/Lehtinen, B. 41-Aero Engr  
LERC/Merrill, W. C.

**NAG 3-59** **Purdue University** **2580**  
Cobalt in nickel base superalloys  
*Period* *Obligations*  
05/01/80-08/30/84 FY83: \$50,000 TOTAL: \$170,896  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Radavich, J. F. LERC/Scheuermann, C. M. 47-Materials Engr

**NAG 3-62** **Purdue University** **2581**  
Water droplet dynamics in annular cascade  
*Period* *Obligations*  
04/15/80-10/31/83 FY83: \$17,514 TOTAL: \$289,326  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Murthy, S. N. LERC/Steinke, R. J. 41-Aero Engr

**NAG 3-204** **Purdue University** **2582**  
Dynamics performance of turbine engines with water ingestion  
*Period* *Obligations*  
08/15/81-02/24/83 FY83: TOTAL: \$43,882  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Murthy, S. N. LERC/Steinke, R. J. 41-Aero Engr

**NAG 3-211** **Purdue University** **2583**  
Dynamic delamination crack propagation in composite laminates  
*Period* *Obligations*  
12/15/81-12/13/83 FY83: \$30,000 TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sun, C. T. LERC/Chamis, C. C. 41-Aero Engr  
LERC/Irvine, T. B.

**NAG 3-226** **Purdue University** **2584**  
Spontaneous ignition characteristics of hydrocarbon fuel/air mixtures  
*Period* *Obligations*  
11/15/81-11/13/83 FY83: \$61,781 TOTAL: \$121,734  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lefebvre, A. H. LERC/Tacina, R. R. 41-Aero Engr  
Rizk, N. K.

**NAG 3-266** **Purdue University** **2585**  
Flame propagation and pollutant formation in heterogeneous and stratified mixtures of fuel drops and air  
*Period* *Obligations*  
03/10/82-11/10/83 FY83: TOTAL: \$116,156  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lefebvre, A. H. LERC/Clark, J. S. 46-Mech Engr  
LERC/Beremand, D. G.

**NAG 3-281** **Purdue University** **2586**  
Analysis of film cooling of supersonic turbojet engine nosels  
*Period* *Obligations*  
05/01/82-04/29/85 FY83: TOTAL: \$145,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Murthy, S. N. LERC/Straight, D. M. 46-Mech Engr  
LERC/Papell, S. S.

**NAG 3-351** **Purdue University** **2587**  
Saturated laser fluorescence in turbulent sooting flames at high pressure  
*Period* *Obligations*  
10/30/82-10/29/84 FY83: \$137,369 TOTAL: \$137,369  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Laurendeau, N. M. LERC/Lyons, V. J. 46-Mech Engr  
Sweeney, D. W.

**NAG 3-360** **Purdue University** **2588**  
The role of hydroxyl radical in the chemistry of soot formation  
*Period* *Obligations*  
12/15/82-12/14/85 FY83: \$171,750 TOTAL: \$171,750  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Laurendeau, N. M. LERC/Lezberg, E. A. 12-Chemistry  
Sweeney, D. W. LERC/Haggard, J.

**NAG 3-412** **Purdue University** **2589**  
Aerodynamic mistuning of a bladed disk  
*Period* *Obligations*  
04/15/83-01/13/85 FY83: \$105,236 TOTAL: \$105,236  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fleeter, S. LERC/Boldman, D. R. 41-Aero Engr

**NAG 3-433** **Purdue University** **2590**  
Solar energy conversion thru the interaction of plasmons with tunnel junctions  
*Period* *Obligations*  
06/01/83-05/31/84 FY83: \$44,514 TOTAL: \$44,514  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schwartz, R. J. LERC/Anderson, L. M. 19-Phys Sci, NEC  
Datta, S.

**NAG 4-1** **Purdue University** **2591**  
The integrated manual and automatic control of complex flight vehicles  
*Period* *Obligations*  
01/01/80-12/31/83 FY83: \$50,200 TOTAL: \$159,702  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schmidt, D. K. ARC/Berry, D. T. 41-Aero Engr  
DFRF/Powers, B. G.

**NASA'S UNIVERSITY PROGRAM**  
**INDIANA (Continued)**

**NAG 5-3** **Purdue University** **2592**  
 Research on aspects of the massively parallel processor  
*Period* *Obligations*  
 01/01/80-08/31/82 FY83: TOTAL: \$97,949  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Reeves, A. P. GSFC/Strong, J. P. 45-Elec Engr  
 GSFC/Wallgren, K.

**NAGW 393** **Purdue University** **2599**  
 Annual international symposium on machine processing of  
 remotely sensor data  
*Period* *Obligations*  
 07/30/83-12/30/83 FY83: \$9,950 TOTAL: \$9,950  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Baumgerder, M. F. HQ-EL/Calabrese, M. A.  
 32-Geological Sci

**NAG 5-101** **Purdue University** **2593**  
 Study the effect of cloud inhomogeneity on the Earth radiation  
 budget  
*Period* *Obligations*  
 09/01/80-11/30/83 FY83: \$35,000 TOTAL: \$98,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Davies, R. GSFC/Curran, R. J. 31-Atmos Sci  
 GSFC/King, M. D.

**NAS 2-10514** **Purdue University** **2600**  
 Influences of mechanical vibration of plant growth and develop-  
 ment under hypogravity conditions  
*Period* *Obligations*  
 01/17/80-11/16/81 FY83: TOTAL: \$17,041  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Mitchell, C. A. ARC/Ferandin, J. 51-Biological Sci  
 ARC/Mancini, R.

**NAG 5-106** **Purdue University** **2594**  
 Parameterization of cloud effects on the absorption of solar  
 radiation  
*Period* *Obligations*  
 09/15/80-05/14/83 FY83: TOTAL: \$78,679  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Davies, R. GSFC/Shukla, T. 31-Atmos Sci

**NAS 5-26287** **Purdue University** **2601**  
 MAGSAT science investigation. Application of MAGSAT to  
 lithospheric modeling in South America. Part 1: Processing and  
 interpretation of magnetic and gravity anomaly data  
*Period* *Obligations*  
 09/26/80-12/31/83 FY83: TOTAL: \$96,342  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hinze, W. J. GSFC/Oseroff, H. 32-Geological Sci

**NAG 5-231** **Purdue University** **2595**  
 Geoid height and the thickness of the lithosphere  
*Period* *Obligations*  
 05/01/82-02/29/84 FY83: TOTAL: \$22,715  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Crough, S. T. GSFC/Kouns, C. W. 32-Geological Sci  
 GSFC/McAdoo, D. C.

**NAS 5-26859** **Purdue University** **2602**  
 LANDSAT-4 image data quality analyses  
*Period* *Obligations*  
 08/09/82-12/09/84 FY83: \$50,000 TOTAL: \$150,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Anuta, P. E. GSFC/Oseroff, H. 49-Engr, NEC

**NAG 5-269** **Purdue University** **2596**  
 Measurement and modeling of the optical scattering properties  
 of crop canopies  
*Period* *Obligations*  
 09/01/82-08/31/84 FY83: \$83,000 TOTAL: \$158,753  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Vanderbilt, V. C. GSFC/Deering, D. W. 55-Agriculture Sci

**NAS 8-34009** **Purdue University** **2603**  
 Utilization of satellite cloud information to diagnose the energy  
 state and transformations in extratropical cyclones  
*Period* *Obligations*  
 06/01/81-05/31/84 FY83: \$56,779 TOTAL: \$162,971  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Smith, P. J. MSFC/Fichtl, G. H. 31-Atmos Sci  
 MSFC/Kaufman, J.

**NAG 5-304** **Purdue University** **2597**  
 Improving the geological interpretation of magnetic and gravity  
 satellite anomalies  
*Period* *Obligations*  
 04/01/83-03/31/84 FY83: \$45,000 TOTAL: \$45,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hinze, W. J. GSFC/Kouns, C. W. 32-Geological Sci  
 Braile, L. W. GSFC/Langel, R. A.

**NAS 8-34303** **Purdue University** **2604**  
 Investigation of the thermophysical properties of PbSnTe and  
 HgCdTe  
*Period* *Obligations*  
 03/01/81-09/30/83 FY83: \$7,200 TOTAL: \$41,430  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Paciesas, W. S. MSFC/Yates, I. C. 45-Elec Engr  
 MSFC/Williams, J. R.

**NAG 9-48** **Purdue University** **2598**  
 Chemical studies of meteorites  
*Period* *Obligations*  
 03/01/83-02/29/84 FY83: \$41,500 TOTAL: \$41,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Lipschutz, M. E. JSC/Dietrich, J. W. 12-Chemistry

**NAS 9-16528** **Purdue University** **2605**  
 Remote sensing of agriculture, Earth resources, and man's  
 environment  
*Period* *Obligations*  
 12/01/81-09/30/84 FY83: \$869,000 TOTAL: \$1,743,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bauer, M. E. JSC/Browne, I. D. 39-Env Sci, NEC

# **NASA'S UNIVERSITY PROGRAM** **INDIANA (Continued)**

**NCA 2-605001** **Purdue University** **2606**  
A study of the factors influencing the performance and morale of small research groups in isolation  
*Period* *Obligations*  
06/01/80-05/31/82 FY83: TOTAL: \$44,383  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Castore, C. H. ARC/Patton, M. 62-Social Aspects  
Heslin, R.

**NGL 15-005-140** **Purdue University** **2614**  
Origin of chondrites from relationships between fourteen key trace elements  
*Period* *Obligations*  
06/21/71-02/28/84 FY83: TOTAL: \$657,757  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lipschutz, M. E. HQ-EL/Taylor, L. A. 32-Geological Sci  
HQ-EL/Quaide, W. L.

**NCA 2-605201** **Purdue University** **2607**  
Three dimensional transonic aerodynamic calculations  
*Period* *Obligations*  
06/01/82-05/31/84 FY83: \$10,262 TOTAL: \$30,220  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Yang, H. T. ARC/Goorjian, P. 41-Aero Engr

**NSG 2192** **Purdue University** **2615**  
Joint cooperative program in computer graphics  
*Period* *Obligations*  
11/01/76-12/31/81 FY83: TOTAL: \$210,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Anderson, D. C. ARC/Carmichael, R. L. 41-Aero Engr  
White, P. R.  
Garrett, R. E.

**NCC 2-100** **Purdue University** **2608**  
Higher plant species selection criteria for a closed ecological life support system: Photosynthetic and nutritional aspects  
*Period* *Obligations*  
09/01/80-11/30/83 FY83: \$85,000 TOTAL: \$259,863  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mitchell, C. A. ARC/MacElroy, R. D. 55-Agriculture Sci

**NSG 3135** **Purdue University** **2616**  
Aerodynamics parameters affecting turbopropeller performance  
*Period* *Obligations*  
01/15/77-10/26/83 FY83: \$46,720 TOTAL: \$606,501  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sullivan, J. P. LERC/Mitchell, G. A. 41-Aero Engr

**NCC 2-148** **Purdue University** **2609**  
NASA-Purdue University cooperative program in computer graphics  
*Period* *Obligations*  
09/01/81-12/31/83 FY83: TOTAL: \$72,146  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Anderson, D. C. ARC/Carmichael, R. 41-Aero Engr

**NSG 3185** **Purdue University** **2617**  
Analytical and experimental study on impact damage of laminated composites  
*Period* *Obligations*  
10/31/77-10/01/83 FY83: TOTAL: \$150,186  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sun, C. T. LERC/Chamis, C. C. 41-Aero Engr

**NCC 2-192** **Purdue University** **2610**  
Flight controls and displays of V/STOL aircraft  
*Period* *Obligations*  
06/01/82-11/30/83 FY83: TOTAL: \$34,041  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schmidt, D. K. ARC/Franklin, J. A. 41-Aero Engr  
Andrisani, D., Jr.

**NSG 3213** **Purdue University** **2618**  
Fuel sprays in high-speed airflows  
*Period* *Obligations*  
09/01/78-11/30/82 FY83: TOTAL: \$264,961  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lefebvre, A. H. LERC/Bosque, M. A. 41-Aero Engr  
Skiftstad, J. G.

**NCC 2-235** **Purdue University** **2611**  
Objective measures of pilot workload  
*Period* *Obligations*  
01/01/83-12/31/83 FY83: \$19,802 TOTAL: \$19,802  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kantowitz, B. H. ARC/Hart, S. G. 99-Multi-Discip

**NSG 3258** **Purdue University** **2619**  
Atomization of broad-specification aircraft fuels  
*Period* *Obligations*  
05/15/79-11/29/83 FY83: \$53,508 TOTAL: \$231,492  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shifstad, J. G. LERC/Haggard, J. B. 46-Mech Engr

**NCC 2-243** **Purdue University** **2612**  
Flight dynamics, controls, and displays of tilt rotor aircraft  
*Period* *Obligations*  
06/01/83-12/31/84 FY83: \$38,679 TOTAL: \$38,679  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schmidt, D. K. ARC/Franklin, J. A. 41-Aero Engr

**NSG 3285** **Purdue University** **2620**  
Three-dimensional aerodynamic turbomachines  
*Period* *Obligations*  
07/01/79-10/27/84 FY83: \$109,343 TOTAL: \$568,124  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fleeter, S. LERC/Boldman, D. R. 41-Aero Engr

**NCC 2-245** **Purdue University** **2613**  
Manual control and man-vehicle integration  
*Period* *Obligations*  
01/01/83-12/31/84 FY83: \$22,052 TOTAL: \$22,052  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schmidt, D. K. ARC/Hartzell, E. J. 69-Psych, NEC



# **NASA'S UNIVERSITY PROGRAM** **INDIANA (Continued)**

**NSG 5414** **Purdue University** **2621**  
A quantitative application-oriented evaluation of thematic mapper design specifications

Period	Obligations
10/01/79-08/31/82	FY83: TOTAL: \$104,607
Prin. Invest.	NASA Tech. Officer CASE Category
Landgrebe, D. A.	GSFC/Gordon, F. 99-Multi-Discip
Swain, P. H.	

**NSG 7278** **Purdue University** **2622**  
Characterization and elucidation of the mechanism of mechanical stress inhibition of plant growth

Period	Obligations
10/01/76-11/30/83	FY83: \$50,000 TOTAL: \$263,476
Prin. Invest.	NASA Tech. Officer CASE Category
Mitchell, C. A.	HQ-EB/Halstead, T. W. 51-Biological Sci

**NAG 3-390** **Rose-Hulman Institute of Technology** **2623**  
Damping the simple harmonic oscillator by internac mechanical means

Period	Obligations
03/01/83-05/31/83	FY83: \$12,046 TOTAL: \$12,046
Prin. Invest.	NASA Tech. Officer CASE Category
North, C. M.	LERC/Brown, G. V. 46-Mech Engr

**NAG 2-35** **University of Notre Dame** **2624**  
Zero modules and inverse system design

Period	Obligations
04/01/80-10/31/83	FY83: TOTAL: \$47,536
Prin. Invest.	NASA Tech. Officer CASE Category
Sain, M. K.	ARC/Meyer, G. 49-Engr, NEC

**NAG 3-428** **University of Notre Dame** **2625**  
Materials development of electrical contacts for B-Si C

Period	Obligations
05/25/83-05/24/84	FY83: \$50,000 TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer CASE Category
Zeller, M. V.	LERC/Powell, J. A. 47-Materials Engr
Sargent, G. A.	
Stanchina, W. E.	

**NCC 2-147** **University of Notre Dame** **2626**  
Calculations of absolute intensities of transition relevant to the photodiagnosics of combustion

Period	Obligations
09/01/81-10/31/83	FY83: \$62,325 TOTAL: \$127,943
Prin. Invest.	NASA Tech. Officer CASE Category
Huo, W. M.	ARC/Jaffe, R. L. 12-Chemistry
Schuler, R. H.	

**NSG 1419** **University of Notre Dame** **2627**  
Structure of separated flow regions occurring near the leading edge of air foils including transition

Period	Obligations
06/01/77-10/31/83	FY83: \$39,079 TOTAL: \$227,307
Prin. Invest.	NASA Tech. Officer CASE Category
Mueller, T. J.	LARC/Somers, D. M. 41-Aero Engr

**NSG 3048** **University of Notre Dame** **2628**  
Alternatives for jet engine control

Period	Obligations
03/01/75-10/27/83	FY83: TOTAL: \$373,000
Prin. Invest.	NASA Tech. Officer CASE Category
Sain, M. K.	LERC/Lehtinen, B. 45-Elec Engr

**NSG 3195** **University of Notre Dame** **2629**  
Study of aerodynamic mechanism for noise generated by rotor-stator interaction

Period	Obligations
05/01/78-09/16/83	FY83: TOTAL: \$170,298
Prin. Invest.	NASA Tech. Officer CASE Category
Atassi, H.	LERC/Groenewaga, J. 13-Physics

## **IOWA**

**NAS 8-33728** **Drake University** **2630**  
Assess use and development of a computer code rotating flows

Period	Obligations
03/17/80-10/31/83	FY83: \$16,098 TOTAL: \$92,556
Prin. Invest.	NASA Tech. Officer CASE Category
Kopicky, K. J.	MSFC/Fowles, W. W. 19-Phys Sci, NEC
	MSFC/Fichtl, G.

**NAG 1-313** **Iowa State University** **2631**  
Simplified curve fits for the thermodynamic properties of equilibrium air

Period	Obligations
12/01/82-11/30/83	FY83: \$16,029 TOTAL: \$16,029
Prin. Invest.	NASA Tech. Officer CASE Category
Tannehill, J. C.	LARC/Weilmuenster, K. J. 29-Math/Computer, NEC

**NAG 2-30** **Iowa State University** **2632**  
Low-speed, high-lift aerodynamics

Period	Obligations
03/01/80-04/30/84	FY83: \$5,000 TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer CASE Category
James, W. D.	ARC/Olson, L. E. 41-Aero Engr
	ARC/Corsiglia, V. R.

**NAG 2-106** **Iowa State University** **2633**  
Experimental study of unsteady turbulent boundary layers

Period	Obligations
02/01/81-04/30/82	FY83: \$2,672 TOTAL: \$25,070
Prin. Invest.	NASA Tech. Officer CASE Category
Cook, W. J.	ARC/Presley, L. L. 41-Aero Engr

**NAG 2-151** **Iowa State University** **2634**  
Modeling of windblown dust on Mars and Venus

Period	Obligations
01/01/82-12/31/83	FY83: \$9,648 TOTAL: \$23,973
Prin. Invest.	NASA Tech. Officer CASE Category
Iverson, J. D.	ARC/Pollack, J. B. 19-Phys Sci, NEC
	ARC/Summers, A. L.

**NASA'S UNIVERSITY PROGRAM**  
**IOWA (Continued)**

<b>NAG 2-152</b>		<b>Iowa State University</b>	<b>2635</b>
Application of viscous-inviscid interaction methods to transonic turbulent flows			
<i>Period</i>	<i>Obligations</i>		
11/01/81-01/31/84	FY83: \$32,000	TOTAL: \$63,865	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Pletcher, R. H.	ARC/Murphy, J. D.	41-Aero Engr	
	ARC/King, L. S.		
<b>NAG 2-245</b>		<b>Iowa State University</b>	<b>2636</b>
Numerical computation of Space Shuttle orbital flow field			
<i>Period</i>	<i>Obligations</i>		
10/01/83-02/29/84	FY83: \$15,000	TOTAL: \$15,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Tannehill, J. C.	ARC/Marvin, J. G.	41-Aero Engr	
	ARC/Chaussee, D. S.		
<b>NAG 3-356</b>		<b>Iowa State University</b>	<b>2637</b>
Investigation of unsteady axial-flow compressor stator flow			
<i>Period</i>	<i>Obligations</i>		
11/30/82-05/29/84	FY83: \$35,230	TOTAL: \$35,230	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Okiishi, T. H.	LERC/Strazisar, A. J.	41-Aero Engr	
Hathaway, M. D.			
<b>NAG 5-104</b>		<b>Iowa State University</b>	<b>2638</b>
Energetic study of the Goddard laboratory for atmospheric sciences general circulation model			
<i>Period</i>	<i>Obligations</i>		
04/01/80-05/31/84	FY83:	TOTAL: \$100,096	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Chen, T. C.	GSFC/Shukla, J.	31-Atmos Sci	
<b>NAG 5-284</b>		<b>Iowa State University</b>	<b>2639</b>
Kinematic models of mira symbiotics			
<i>Period</i>	<i>Obligations</i>		
11/15/82-11/14/83	FY83: \$6,180	TOTAL: \$6,180	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Willson, L. A.	GSFC/Kondo, Y.	11-Astronomy	
Brugel, E. W.			
Stencel, R. E.			
<b>NAG 5-355</b>		<b>Iowa State University</b>	<b>2640</b>
Diagnostic-analysis of diabatic heating and maintenance of thermal fields in the Southern Hemisphere			
<i>Period</i>	<i>Obligations</i>		
08/01/83-07/31/84	FY83: \$52,450	TOTAL: \$52,450	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Chen, T. C.	GSFC/Baker, W.	31-Atmos Sci	
<b>NAG 8-360</b>		<b>Iowa State University</b>	<b>2641</b>
Follow-up study of CG284-1 region. Follow-up study of CG2-95+0 region. Timing studies of X-ray sources possibly linked to X-ray sources			
<i>Period</i>	<i>Obligations</i>		
06/20/80-12/31/83	FY83:	TOTAL: \$17,948	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lamb, R. C.	MSFC/Stone, J. F.	11-Astronomy	
<b>NAG 8-426</b>		<b>Iowa State University</b>	<b>2642</b>
HRI study of KES 27 and W 28 two similar super nova remnants which may be gamma ray sources			
<i>Period</i>	<i>Obligations</i>		
01/01/82-12/31/83	FY83:	TOTAL: \$6,159	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lamb, R. C.	MSFC/Stone, J. F.	11-Astronomy	
Markert, T. H.			
<b>NCA 2-340301</b>		<b>Iowa State University</b>	<b>2643</b>
Investigation of new algorithms for solving the parabolized Navier-Stokes equations			
<i>Period</i>	<i>Obligations</i>		
10/01/82-11/30/83	FY83: \$19,900	TOTAL: \$19,900	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Tannehill, J. C.	ARC/Chaussee, D. S.	41-Aero Engr	
<b>NCC 1-17</b>		<b>Iowa State University</b>	<b>2644</b>
Analysis of flows with shocks			
<i>Period</i>	<i>Obligations</i>		
10/01/79-08/31/83	FY83:	TOTAL: \$106,170	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Anderson, D. A.	LARC/Salas, M. D.	41-Aero Engr	
<b>NCC 2-19</b>		<b>Iowa State University</b>	<b>2645</b>
Wing/body interference flow investigation			
<i>Period</i>	<i>Obligations</i>		
07/01/79-12/31/83	FY83: \$24,990	TOTAL: \$133,819	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Vogel, J. M.	ARC/Olson, L. E.	41-Aero Engr	
James, W.	ARC/Corsiglia, V. R.		
Genalo, L.			
<b>NCC 2-174</b>		<b>Iowa State University</b>	<b>2646</b>
Theoretical models for the primordial atmospheres of terrestrial planets and for the interiors of Uranus and Neptune			
<i>Period</i>	<i>Obligations</i>		
02/01/82-01/31/84	FY83: \$21,136	TOTAL: \$40,767	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Richardson, S. M.	ARC/Pollack, J. B.	19-Phys Sci, NEC	
Podolzk, M.	ARC/Reynolds, R. T.		
<b>NCC 2-200</b>		<b>Iowa State University</b>	<b>2647</b>
Study of turbulent boundary layers in oscillating flows			
<i>Period</i>	<i>Obligations</i>		
06/01/82-10/14/83	FY83: \$7,800	TOTAL: \$50,050	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Cook, W. J.	ARC/Murphy, J. D.	41-Aero Engr	
<b>NGR 16-002-038</b>		<b>Iowa State University</b>	<b>2648</b>
Calculation of viscous compressible flow			
<i>Period</i>	<i>Obligations</i>		
10/07/71-03/31/84	FY83:	TOTAL: \$261,160	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Tannehill, J. C.	ARC/Rakich, J. U.	41-Aero Engr	

**NASA'S UNIVERSITY PROGRAM**  
**IOWA (Continued)**

**NGT 16-002-800 Iowa State University 2649**  
Graduate student researchers program  
*Period Obligations*  
12/01/80-11/30/83 FY83: TOTAL: \$22,290  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Okiishi, T. H. HQ-LB/Carter, C. H. 46-Mech Engr

**NGT 16-002-801 Iowa State University 2650**  
Graduate student training program in computational fluid dynamics  
*Period Obligations*  
07/01/80-12/31/83 FY83: \$104,872 TOTAL: \$379,871  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Anderson, D. A. HQ-RT/Graves, R. A., Jr. 41-Aero Engr

**NSG 1372 Iowa State University 2651**  
Periodic analysis of large space structures  
*Period Obligations*  
01/01/77-07/15/83 FY83: TOTAL: \$119,945  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lewin, W. LARC/Anderson, M. S. 49-Engr, NEC  
LARC/Pinson, L. D.

**NSG 1605 Iowa State University 2652**  
Load deflection characteristics of inflated structures  
*Period Obligations*  
04/01/79-11/30/83 FY83: TOTAL: \$126,671  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Baumgarten, J. R. LARC/Tanner, J. A. 46-Mech Engr  
Flugrad, D. R.

**NSG 2091 Iowa State University 2653**  
Study of viscous cross-flow effects on cylinders at high Reynolds numbers  
*Period Obligations*  
07/01/75-12/31/83 FY83: TOTAL: \$112,544  
*Prin. Invest. NASA Tech. Officer CASE Category*  
James, W. D. ARC/Malcolm, G. N. 41-Aero Engr  
ARC/Chapman, G. T.

**NAG 1-36 University of Iowa 2654**  
Coupling of the nitrogen-oxygen X and sulfur oxygen X cycles in the troposphere  
*Period Obligations*  
02/01/80-06/30/83 FY83: TOTAL: \$159,431  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Carmichael, G. R. LARC/Fishman, J. 39-Env Sci, NEC  
Peters, L. K. LARC/Rhinehart, R. P.

**NAG 1-195 University of Iowa 2655**  
Fault modeling and experiments for validating fault-tolerant computer systems  
*Period Obligations*  
06/01/81-12/31/83 FY83: \$39,990 TOTAL: \$128,654  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Robinson, J. P. LARC/Lupton, A. O. 22-Computer Science  
Reddy, S. M. LARC/Palumbo, D. L.

**NAG 1-215 University of Iowa 2656**  
Design sensitivity analysis and optimization of built-up structures  
*Period Obligations*  
09/18/81-09/30/83 FY83: \$45,000 TOTAL: \$100,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Haug, E. J. LARC/Giles, G. L. 41-Aero Engr  
Benedict, R. L. LARC/Sobieski, J.

**NAG 2-110 University of Iowa 2657**  
Study of large scale mixing in developing wakes behind streamlined bodies  
*Period Obligations*  
07/01/81-12/31/83 FY83: \$12,565 TOTAL: \$108,555  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ramaprian, B. R. ARC/Marvin, J. G. 41-Aero Engr  
ARC/Brown, J. L.

**NAG 3-206 University of Iowa 2658**  
Improvement of ion thruster design by reduction of wall losses  
*Period Obligations*  
09/01/81-08/29/84 FY83: TOTAL: \$160,986  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Carpenter, R. T. LERC/Sovey, J. S. 13-Physics

**NAG 3-236 University of Iowa 2659**  
Experiments on spin-polarized atoms  
*Period Obligations*  
11/15/81-03/13/84 FY83: \$95,000 TOTAL: \$165,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Stawley, W. C. LERC/Renz, D. D. 12-Chemistry

**NAG 3-449 University of Iowa 2660**  
Interpretation of STS-3/plasma diagnostics package results in terms of large space structure plasma interactions  
*Period Obligations*  
07/10/83-07/09/84 FY83: \$75,005 TOTAL: \$75,005  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Shawhan, S. D. LERC/Purvis, C. K. 19-Phys Sci, NEC

**NAG 5-153 University of Iowa 2661**  
A search for ducted extraordinary-mode echoes  
*Period Obligations*  
04/01/81-03/31/82 FY83: TOTAL: \$27,962  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Calvert, W. GSFC/Wende, C. D. 31-Atmos Sci

**NAG 5-225 University of Iowa 2662**  
Stimulated auroral kilometric radiation  
*Period Obligations*  
04/01/82-06/30/83 FY83: TOTAL: \$25,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Calvert, W. GSFC/Wales, R. O. 11-Astronomy

**NAG 5-295 University of Iowa 2663**  
Measurement of low-energy electrons and protons in the Earth's magnetosphere  
*Period Obligations*  
02/01/83-01/31/84 FY83: \$42,003 TOTAL: \$42,003  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Frank, L. A. GSFC/Wales, R. O. 11-Astronomy

**NASA'S UNIVERSITY PROGRAM**  
**IOWA (Continued)**

<b>NAG 5-310</b>	<b>University of Iowa</b>	<b>2664</b>	<b>NAS 5-11279</b>	<b>University of Iowa</b>	<b>2671</b>
Dynamics Explorer plasma wave instrument			Solar wind plasma wave experiment for the Helios missions		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
04/15/83-04/14/84	FY83: \$195,459	TOTAL: \$195,459	03/30/70-05/31/84	FY83: \$11,000	TOTAL: \$1,619,719
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gurnett, D. A.	GSFC/Bullock, G. D.	19-Phys Sci, NEC	Gurnett, D. A.	GSFC/Bullock, G.	11-Astronomy
<b>NAGW 190</b>	<b>University of Iowa</b>	<b>2665</b>	<b>NAS 5-24293</b>	<b>University of Iowa</b>	<b>2672</b>
Diagnostics of laboratory beam-plasma phenomena using the OSS-1/Spacelab 2 plasma diagnostics package (PDP)			Global auroral imaging at visible and ultraviolet wavelengths for the Dynamic Explorer		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
02/01/81-06/30/82	FY83:	TOTAL: \$36,000	07/26/77-08/31/83	FY83:	TOTAL: \$1,224,195
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shawhan, S. D.	HQ-EZ/Mayr, H. G.	19-Phys Sci, NEC	Frank, L. A.	GSFC/Fellerman, K. D.	13-Physics
<b>NAGW 256</b>	<b>University of Iowa</b>	<b>2666</b>	<b>NAS 5-25530</b>	<b>University of Iowa</b>	<b>2673</b>
Wave accessibility and ducting			Data reduction and analysis for measurements of low-energy electrons and protons in the Earth's magnetosphere and the interplanetary medium		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
10/15/81-03/31/84	FY83: \$25,000	TOTAL: \$70,000	10/01/79-03/31/83	FY83:	TOTAL: \$200,527
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Calvert, W.	HQ-EE/Lynch, J. T.	13-Physics	Frank, L. A.	GSFC/Gemmell, J. D.	13-Physics
	HQ-EL/Evans, N.				
<b>NAGW 337</b>	<b>University of Iowa</b>	<b>2667</b>	<b>NAS 5-25689</b>	<b>University of Iowa</b>	<b>2674</b>
Analysis of Voyager wideband plasma wave observations			Spin scan global aurora imaging instrument experiment for Dynamics Explorer		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
04/15/82-05/14/84	FY83: \$95,000	TOTAL: \$147,000	02/10/80-09/30/83	FY83: \$524,865	TOTAL: \$1,047,865
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kurth, W. S.	HQ-EL/Quaide, W. L.	11-Astronomy	Frank, L. A.	GSFC/Bullock, G. D.	11-Astronomy
Gurnett, D.	HQ-EE/Evans, N.				
<b>NAGW 364</b>	<b>University of Iowa</b>	<b>2668</b>	<b>NAS 5-25690</b>	<b>University of Iowa</b>	<b>2675</b>
Investigation of radio emissions from planetary atmospheres			Data analysis for plasma wave instrument Dynamics Explorer		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
07/01/82-05/31/84	FY83: \$25,000	TOTAL: \$50,000	02/10/80-07/31/83	FY83: \$71,000	TOTAL: \$343,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Grabbe, C. L.	HQ-EE/Lynch, J. T.	13-Physics	Shawhan, S.	GSFC/Skillman, D.	41-Aero Engr
	HQ-EE/Wiskevchein, M. J.				
<b>NAGW 386</b>	<b>University of Iowa</b>	<b>2669</b>	<b>NAS 5-25999</b>	<b>University of Iowa</b>	<b>2676</b>
A multidisciplinary study of planetary solar and astrophysical radio emissions			Hardware for unified radio and plasma wave experiment International Solar Polar Mission investigation		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
02/01/83-01/31/84	FY83: \$49,996	TOTAL: \$49,996	12/31/79-09/30/83	FY83:	TOTAL: \$449,201
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gurnett, D. A.	HQ-E/Rosendhal, J. D.	13-Physics	Gurnett, D. A.	GSFC/Stone, R. G.	11-Astronomy
	HQ-EP/Schrom, J.			GSFC/Davis, M.	
<b>NAS 2-11125</b>	<b>University of Iowa</b>	<b>2670</b>	<b>NAS 5-26125</b>	<b>University of Iowa</b>	<b>2677</b>
Pioneer 10/11 data analysis of Jovian charged particles experiment			Interplanetary monitoring platform-J data reduction and analysis		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
10/01/81-10/31/83	FY83: \$122,697	TOTAL: \$232,697	04/01/80-03/31/82	FY83:	TOTAL: \$60,590
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Vanallen, J. A.	ARC/Fimmel, R. O.	42-Astro Engr	Gurnett, D. A.	GSFC/Corrigan, J. P.	11-Astronomy
Goertz, C. K.					

**NASA'S UNIVERSITY PROGRAM**  
**IOWA (Continued)**

**NAS 5-26257** **University of Iowa** **2678**  
International Sun-Earth Explorer A and B data reduction and analysis  
*Period* *Obligations*  
07/01/80-09/30/84 FY83: \$250,480 TOTAL: \$1,054,080  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Frank, L. A. GSFC/Wales, R. O. 31-Atmos Sci

**NAS 5-26425** **University of Iowa** **2679**  
Use of MAGSAT anomaly data for crustal structure and mineral resources in the U.S. Midcontinent  
*Period* *Obligations*  
12/03/80-09/03/83 FY83: TOTAL: \$71,526  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Carmichael, R. S. GSFC/Oseroff, H. 32-Geological Sci  
Anderson, R. R.  
Clark, K. F.

**NAS 5-26819** **University of Iowa** **2680**  
Data reduction and analysis of the International Sun-Earth Explorers (ISEE) plasma wave instrument  
*Period* *Obligations*  
03/01/82-09/30/84 FY83: \$211,031 TOTAL: \$447,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gurnett, D. A. GSFC/Wales, R. O. 11-Astronomy

**NAS 5-26843** **University of Iowa** **2681**  
A plasma wave investigation for the origin of plasmas in the Earth's neighborhood polar plasma laboratory  
*Period* *Obligations*  
06/07/82-09/15/84 FY83: \$56,645 TOTAL: \$76,645  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shawhan, S. D. GSFC/O'Brien, J. J. 13-Physics

**NAS 5-26857** **University of Iowa** **2682**  
A plasma wave investigation for the origin of plasmas in the Earth's neighborhood geomagnetic tail laboratory  
*Period* *Obligations*  
06/07/82-09/15/84 FY83: \$55,519 TOTAL: \$75,519  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gurnett, D. A. GSFC/O'Brien, J. J. 13-Physics

**NAS 5-26858** **University of Iowa** **2683**  
Conduct a definition study of the comprehensive plasmas instrument for measurement of plasma in the Earth's magnetotail under the OPEN project  
*Period* *Obligations*  
05/24/82-09/15/84 FY83: \$79,378 TOTAL: \$157,378  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Frank, L. A. GSFC/O'Brien, J. J. 11-Astronomy

**NAS 5-27358** **University of Iowa** **2684**  
Definition of advanced auroral imaging instrumentation at visible wavelengths (open mission)  
*Period* *Obligations*  
12/10/82-09/15/84 FY83: \$179,616 TOTAL: \$179,616  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Frank, L. A. GSFC/O'Brien, J. J. 13-Physics

**NAS 8-32807** **University of Iowa** **2685**  
Definition of instruments for an ejectable plasma diagnostics package for Spacelab 2 mission  
*Period* *Obligations*  
10/03/77-11/30/85 FY83: \$761,492 TOTAL: \$4,992,071  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shawhan, S. D. MSFC/Talley, D. 31-Atmos Sci  
MSFC/Ise, R.

**NAS 8-33770** **University of Iowa** **2686**  
Research study, a recoverable plasma diagnostic package for spacelab  
*Period* *Obligations*  
07/25/80-12/31/83 FY83: \$175,000 TOTAL: \$1,318,562  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shawhan, S. D. MSFC/Guynes, B. V. 13-Physics  
MSFC/Ise, R.

**NGL 16-001-002** **University of Iowa** **2687**  
Theoretical and experimental studies related to particles and fields associated with major bodies of solar system and with interplanetary space  
*Period* *Obligations*  
05/23/62-12/31/83 FY83: \$135,663 TOTAL: \$5,926,271  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Van Allen, J. A. HQ-EE/Lynch, J. T. 13-Physics  
HQ-EE/Schmerling, E. R.

**NGL 16-001-043** **University of Iowa** **2688**  
Waves in plasmas  
*Period* *Obligations*  
03/28/67-11/30/83 FY83: \$165,000 TOTAL: \$1,567,302  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gurnett, D. A. HQ-EE/Lynch, J. T. 13-Physics  
HQ-EE/Schmerling, E. R.

**NSG 3305** **University of Iowa** **2689**  
Development of finite differential method for internal computational fluid mechanics  
*Period* *Obligations*  
09/01/79-03/31/83 FY83: TOTAL: \$136,459  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Chen, C. J. LERC/Johnson, G. M. 41-Aero Engr

**NSG 7632** **University of Iowa** **2690**  
Investigation of charged particle acceleration mechanisms in space plasmas  
*Period* *Obligations*  
07/01/79-10/30/83 FY83: \$45,000 TOTAL: \$207,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goertz, C. K. HQ-EZ/Lynch, J. T. 19-Phys Sci, NEC  
HQ-EZ/Schmerling, E. R.

# NASA'S UNIVERSITY PROGRAM KANSAS

## KANSAS

**NAS 9-16457** **Kansas State University** **2691**  
Spectral input crop growth, development, and yield modeling for wheat and barley use of measured soil moisture data in crop growth, development and yield estimation

<i>Period</i>	<i>Obligations</i>	
11/01/81-09/30/84	FY83: \$380,000	TOTAL: \$763,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kanemasu, E. T.	JSC/Browne, I. D.	39-Env Sci, NEC

**NSG 7613** **Kansas State University** **2692**  
Northern plains of Mars

<i>Period</i>	<i>Obligations</i>	
06/01/79-12/31/83	FY83:	TOTAL: \$53,637
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Underwood, J. R., Jr.	HQ-EL/Boyce, J. M.	32-Geological Sci

**NAG 1-75** **University of Kansas** **2693**  
Development of unsteady suction analogy

<i>Period</i>	<i>Obligations</i>	
06/16/80-03/31/83	FY83:	TOTAL: \$53,397
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lan, C. E.	LARC/Frink, N. T.	41-Aero Engr

**NAG 1-134** **University of Kansas** **2694**  
A theoretical investigation of wing rocking

<i>Period</i>	<i>Obligations</i>	
01/01/81-09/30/83	FY83: \$5,557	TOTAL: \$69,484
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lan, C. E.	LARC/Gilbert, W. P.	41-Aero Engr
	LARC/Nguyen, L. T.	

**NAG 1-147** **University of Kansas** **2695**  
Effects of supersonic prop-fan velocities on acoustic structural fatigue

<i>Period</i>	<i>Obligations</i>	
02/01/81-09/30/83	FY83:	TOTAL: \$15,919
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, H. W.	LARC/Mayes, W. H.	49-Engr, NEC
Davidson, J. P.		

**NAG 1-205** **University of Kansas** **2696**  
Study of advanced commuter configurations

<i>Period</i>	<i>Obligations</i>	
08/15/81-02/28/83	FY83:	TOTAL: \$84,937
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roskam, J.	LARC/Williams, L. J.	41-Aero Engr
	LARC/Johnson, J. L., Jr.	

**NAG 1-282** **University of Kansas** **2697**  
Ride quality systems for commuter aircraft

<i>Period</i>	<i>Obligations</i>	
06/28/82-12/27/82	FY83:	TOTAL: \$9,994
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Downing, D. R.	LARC/Williams, L. J.	41-Aero Engr

**NAG 1-308** **University of Kansas** **2698**  
Transonic airfoil design with nonuniform flow effects

<i>Period</i>	<i>Obligations</i>	
11/03/82-01/02/84	FY83: \$35,360	TOTAL: \$35,360
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lan, C. E.	LARC/Henderson, W. P.	41-Aero Engr
	LARC/Putnam, L. E.	

**NAG 1-324** **University of Kansas** **2699**  
Advanced sidestick controller mechanizations for general aviation aircraft

<i>Period</i>	<i>Obligations</i>	
01/10/83-01/08/84	FY83: \$29,997	TOTAL: \$29,997
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Downing, D.	LARC/Bergeron, H. P.	41-Aero Engr
Roskam, J.		

**NAG 1-345** **University of Kansas** **2700**  
Aerodynamics and flight dynamics of subsonic aircraft

<i>Period</i>	<i>Obligations</i>	
03/03/83-03/02/84	FY83: \$204,781	TOTAL: \$204,781
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roskam, J.	LARC/Williams, L. J.	41-Aero Engr
Downing, D. R.	LARC/Holmes, B. J.	

**NAG 1-396** **University of Kansas** **2701**  
Calculation of vortex-flap aerodynamic characteristics

<i>Period</i>	<i>Obligations</i>	
08/15/83-04/14/84	FY83: \$19,524	TOTAL: \$19,524
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lan, C. E.	LARC/Gainer, T. G.	41-Aero Engr

**NAG 1-401** **University of Kansas** **2702**  
Flight investigation of instability and transition

<i>Period</i>	<i>Obligations</i>	
09/01/83-06/30/84	FY83: \$207,754	TOTAL: \$207,754
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wentz, W. H.	LARC/Morris, D. J.	41-Aero Engr
	LARC/Holmes, B. J.	

**NAG 2-201** **University of Kansas** **2703**  
An inventory of state natural resources information systems

<i>Period</i>	<i>Obligations</i>	
09/01/82-10/31/83	FY83:	TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Martinko, E. A.	ARC/Peterson, D. L.	
Caron, L. M.	ARC/Brass, J. A.	29-Math/Computer, NEC

**NAG 3-11** **University of Kansas** **2704**  
Dynamic distortion analysis technology study

<i>Period</i>	<i>Obligations</i>	
11/15/79-11/11/84	FY83:	TOTAL: \$133,294
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Booth, F. W.	LERC/Neumann, H. E.	41-Aero Engr

**NASA'S UNIVERSITY PROGRAM**  
**KANSAS (Continued)**

**NAG 3-32 University of Kansas 2705**  
 Static and dynamic nonlinear analysis with substructure models  

Period	Obligations
03/01/80-05/27/84	FY83: TOTAL: \$88,419
Prin. Invest.	NASA Tech. Officer CASE Category
Dodds, R. H.	LERC/Hirschbein, M. S. 46-Mech Engr
	LERC/Chamis, C. C.

**NAG 3-85 University of Kansas 2706**  
 Study and design of approaches for simultaneous multi-axis thrust measurements of air breathing jet engines  

Period	Obligations
07/07/80-02/28/84	FY83: \$16,250 TOTAL: \$52,199
Prin. Invest.	NASA Tech. Officer CASE Category
Schweikhard, W. G.	LERC/Straight, D. M. 41-Aero Engr
	LERC/Spuckler, C. M.

**NAG 3-273 University of Kansas 2707**  
 Joint Kansas University/NASA graduate researchers program  

Period	Obligations
05/01/82-04/30/84	FY83: TOTAL: \$65,839
Prin. Invest.	NASA Tech. Officer CASE Category
Schweikhard, W. G.	LERC/Shaw, R. J. 41-Aero Engr

**NAG 5-30 University of Kansas 2708**  
 Measurement of soil using remote sensing active microwave techniques  

Period	Obligations
03/01/80-04/30/84	FY83: \$305,000 TOTAL: \$1,030,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ulaby, F. T.	GSFC/Schmugge, T. J. 39-Env Sci, NEC
Dobson, C.	GSFC/O'Neill, P. E.

**NAG 5-268 University of Kansas 2709**  
 Scattering models in the microwave regime  

Period	Obligations
09/01/82-08/31/84	FY83: \$45,000 TOTAL: \$84,800
Prin. Invest.	NASA Tech. Officer CASE Category
Fung, A. K.	GSFC/Choudhury, B. 55-Agriculture Sci

**NAG 5-271 University of Kansas 2710**  
 Determination of the sources of radar scattering  

Period	Obligations
09/01/82-08/31/84	FY83: \$60,855 TOTAL: \$106,110
Prin. Invest.	NASA Tech. Officer CASE Category
Moore, R. K.	GSFC/Brakke, T. W. 55-Agriculture Sci
Ulaby, F.	

**NAG 5-272 University of Kansas 2711**  
 Measuring and modeling of the dielectric properties and attenuation of vegetation  

Period	Obligations
09/01/82-12/31/83	FY83: \$31,000 TOTAL: \$88,075
Prin. Invest.	NASA Tech. Officer CASE Category
Ulaby, F. T.	GSFC/Schmugge, T. 55-Agriculture Sci
Martin, C.	

**NAGW 187 University of Kansas 2712**  
 Cometary atmospheres  

Period	Obligations
06/01/81-12/31/83	FY83: \$19,977 TOTAL: \$41,977
Prin. Invest.	NASA Tech. Officer CASE Category
Beard, D. B.	HQ-EL/Brinton, H. C. 19-Phys Sci, NEC
	HQ-EL/Brunk, W. E.

**NAGW 217 University of Kansas 2713**  
 To model the magnetic field of Jupiter  

Period	Obligations
06/01/81-05/31/84	FY83: \$26,474 TOTAL: \$71,457
Prin. Invest.	NASA Tech. Officer CASE Category
Beard, D. B.	HQ-EE/Lynch, J. T. 19-Phys Sci, NEC
	HQ-EE/Wiskerchen, M. J.

**NAGW 289 University of Kansas 2714**  
 Numerical and observational study of charged particles motion in the mid and inner Jovian magnetosphere  

Period	Obligations
11/01/81-04/14/84	FY83: \$25,000 TOTAL: \$55,000
Prin. Invest.	NASA Tech. Officer CASE Category
Armstrong, T. P.	HQ-EE/Lynch, J. T. 13-Physics
	HQ-EE/Wiskerchen, M. J.

**NAGW 334 University of Kansas 2715**  
 C-band measurements of radar backscatter from ice  

Period	Obligations
03/15/82-03/14/83	FY83: TOTAL: \$99,096
Prin. Invest.	NASA Tech. Officer CASE Category
Onstott, R. G.	HQ-EE/Carver, K. L. 33-Oceanography
Moore, R. K.	HQ-EE/Wilson, W. S.

**NAGW 381 University of Kansas 2716**  
 Research in support of NASA's space science and application program  

Period	Obligations
11/01/82-10/31/84	FY83: \$87,770 TOTAL: \$87,770
Prin. Invest.	NASA Tech. Officer CASE Category
Frost, V. S.	HQ-E/Rosendhal, J. D. 11-Astronomy
	HQ-EP/Schrom, J.

**NAS 1-16363 University of Kansas 2717**  
 Design study of technology requirements for high performance single-propeller-driven business airplanes  

Period	Obligations
08/26/80-09/15/82	FY83: TOTAL: \$112,165
Prin. Invest.	NASA Tech. Officer CASE Category
Greeley, R.	LARC/Holmes, B. J. 41-Aero Engr
Roskam, J.	

**NAS 5-27191 University of Kansas 2718**  
 Study of evapotranspiration through the use of satellite data  

Period	Obligations
03/22/82-05/22/82	FY83: TOTAL: \$4,842
Prin. Invest.	NASA Tech. Officer CASE Category
Kanemasy, E. T.	GSFC/Schmugge, T. 13-Physics

**NASA'S UNIVERSITY PROGRAM  
KANSAS (Continued)**

<b>NAS 9-15421</b>	<b>University of Kansas</b>	<b>2719</b>	Radar measurements in agricultural applications	
<i>Period</i> 10/01/77-09/30/84	<i>Obligations</i> FY83: \$100,000	<i>Obligations</i> TOTAL: \$587,620	<i>Prin. Invest.</i> Ulaby, F. T.	
<i>NASA Tech. Officer</i> JSC/Paris, J. F.		<i>CASE Category</i> 31-Atmos Sci		
<b>NAS 9-16419</b>	<b>University of Kansas</b>	<b>2720</b>	Study simulation of spaceborne microwave soil moisture sensing	
<i>Period</i> 08/19/81-07/15/82	<i>Obligations</i> FY83: \$49,756	<i>Obligations</i> TOTAL: \$49,756	<i>Prin. Invest.</i> Ulaby, F. T.	
<i>NASA Tech. Officer</i> JSC/Paris, J. F.		<i>CASE Category</i> 32-Geological Sci		
<b>NAS 9-16709</b>	<b>University of Kansas</b>	<b>2721</b>	Ground scatterometer cross-calibration	
<i>Period</i> 08/01/82-01/31/83	<i>Obligations</i> FY83: \$40,000	<i>Obligations</i> TOTAL: \$40,000	<i>Prin. Invest.</i> Ulaby, F. T.	
<i>NASA Tech. Officer</i> JSC/Nuss, R. W.		<i>CASE Category</i> 19-Phys Sci, NEC		
<b>NAS 9-16865</b>	<b>University of Kansas</b>	<b>2722</b>	Design, construction, and delivery of three C-band scatterometer units	
<i>Period</i> 04/16/83-04/15/84	<i>Obligations</i> FY83: \$70,000	<i>Obligations</i> TOTAL: \$70,000	<i>Prin. Invest.</i> Ulaby, F. T.	
<i>NASA Tech. Officer</i> JSC/Browne, I. D.		<i>CASE Category</i> 39-Env Sci, NEC		
<b>NASW 3438</b>	<b>University of Kansas</b>	<b>2723</b>	Creation of an experimental technical transfer project University of Kansas Center for Research, Incorporated	
<i>Period</i> 01/07/81-06/30/84	<i>Obligations</i> FY83: \$97,567	<i>Obligations</i> TOTAL: \$97,567	<i>Prin. Invest.</i> Barr, B. G.	
<i>NASA Tech. Officer</i> HQ-LG/Ault, L. A. HQ-LG/Bivins, R. G.		<i>CASE Category</i> 46-Mech Engr		
<b>NCC 1-6</b>	<b>University of Kansas</b>	<b>2724</b>	A research program to reduce interior noise in general aviation airplanes	
<i>Period</i> 05/01/79-04/30/84	<i>Obligations</i> FY83: \$56,404	<i>Obligations</i> TOTAL: \$311,076	<i>Prin. Invest.</i> Roskam, J.	
<i>NASA Tech. Officer</i> LARC/Stephens, D. G.		<i>CASE Category</i> 41-Aero Engr		
<b>NCC 1-51</b>	<b>University of Kansas</b>	<b>2725</b>	C-band measurements of radar backscatter from ice	
<i>Period</i> 03/15/81-05/31/82	<i>Obligations</i> FY83: \$77,037	<i>Obligations</i> TOTAL: \$77,037	<i>Prin. Invest.</i> Onstott, R. G. Moore, R. K.	
<i>NASA Tech. Officer</i> LARC/Grantham, W. L.		<i>CASE Category</i> 39-Env Sci, NEC		
<b>NCC 1-79</b>	<b>University of Kansas</b>	<b>2726</b>	The specification, integration, and testing of a unified advanced flight management/flight control system	
<i>Period</i> 06/14/83-06/13/84	<i>Obligations</i> FY83: \$31,802	<i>Obligations</i> TOTAL: \$31,802	<i>Prin. Invest.</i> Downing, D. R.	
<i>NASA Tech. Officer</i> LARC/Bryant, W. H.		<i>CASE Category</i> 41-Aero Engr		
<b>NCC 2-92</b>	<b>University of Kansas</b>	<b>2727</b>	Investigation of variable camber devices for helicopter rotor systems	
<i>Period</i> 06/01/80-09/30/83	<i>Obligations</i> FY83: \$2,767	<i>Obligations</i> TOTAL: \$94,010	<i>Prin. Invest.</i> Fortin, P. Awani, A.	
<i>NASA Tech. Officer</i> ARC/Stroub, R. H. ARC/Young, L. A.		<i>CASE Category</i> 41-Aero Engr		
<b>NCC 2-107</b>	<b>University of Kansas</b>	<b>2728</b>	Development of methodology for computer aided design and manufacture of wind tunnel model components	
<i>Period</i> 12/15/80-09/30/83	<i>Obligations</i> FY83: \$82,500	<i>Obligations</i> TOTAL: \$82,500	<i>Prin. Invest.</i> Schweikhard, W. G.	
<i>NASA Tech. Officer</i> ARC/Cozzolongo, J. V.		<i>CASE Category</i> 41-Aero Engr		
<b>NCC 2-110</b>	<b>University of Kansas</b>	<b>2729</b>	Calibration laboratory developments for propulsion simulators	
<i>Period</i> 12/15/80-10/31/83	<i>Obligations</i> FY83: \$82,500	<i>Obligations</i> TOTAL: \$82,500	<i>Prin. Invest.</i> Schweikhard, W. G.	
<i>NASA Tech. Officer</i> ARC/Harper, M. ARC/Bailey, R. O.		<i>CASE Category</i> 41-Aero Engr		
<b>NCC 2-112</b>	<b>University of Kansas</b>	<b>2730</b>	Investigation of the performance improvements with the free-tip rotor on helicopters	
<i>Period</i> 12/01/80-08/31/84	<i>Obligations</i> FY83: \$42,568	<i>Obligations</i> TOTAL: \$136,384	<i>Prin. Invest.</i> Fortin, P. E. Van Aken, J. M.	
<i>NASA Tech. Officer</i> ARC/Stroub, R. H. ARC/Young, L.		<i>CASE Category</i> 41-Aero Engr		
<b>NCC 2-175</b>	<b>University of Kansas</b>	<b>2731</b>	Investigation of a free-tip rotor configuration	
<i>Period</i> 02/01/82-01/31/84	<i>Obligations</i> FY83: \$37,322	<i>Obligations</i> TOTAL: \$67,322	<i>Prin. Invest.</i> Lan, C. E. Fortin, P. E. Kumagai, H.	
<i>NASA Tech. Officer</i> ARC/Stroub, R. H. ARC/Young, L.		<i>CASE Category</i> 41-Aero Engr		
<b>NCC 2-242</b>	<b>University of Kansas</b>	<b>2732</b>	V/STOL handling and control power requirements	
<i>Period</i> 06/01/83-11/30/84	<i>Obligations</i> FY83: \$30,000	<i>Obligations</i> TOTAL: \$30,000	<i>Prin. Invest.</i> Roskam, J.	
<i>NASA Tech. Officer</i> ARC/Franklin, J. A.		<i>CASE Category</i> 41-Aero Engr		



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<b>NCC 2-251</b>	<b>University of Kansas</b>	<b>2733</b>	<b>NSG 1629</b>			<b>University of Kansas</b>	<b>2740</b>
Computerized structural analysis			An investigation of vortex induced aerodynamic characteristics of supersonic cruise configurations				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>			
06/27/83-08/26/85	FY83: \$38,102	TOTAL: \$38,102	06/16/79-12/31/83	FY83: \$30,047	TOTAL: \$104,384		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Fortin, P. E.	ARC/Gupta, K. K. 29-Math/Computer, NEC		Lan, C. E.	LARC/Lamar, J. E. 41-Aero Engr			
	ARC/Knight, R. J.			LARC/Jernell, L. S.			
<b>NCC 4-3</b>			<b>NSG 1633</b>			<b>University of Kansas</b>	<b>2741</b>
Graduate research in aeronautical flight test techniques			Analysis of performance and handling qualities considerations for wake modification devices on agricultural aircraft				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>			
12/15/80-12/31/83	FY83:	TOTAL: \$164,451	09/01/79-10/31/83	FY83:	TOTAL: \$93,016		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Schweikhard, W. G.	ARC/Ayers, T. G. 41-Aero Engr		Roskam, J.	LARC/Holmes, B. J. 41-Aero Engr			
	ARC/Washington, H. P.						
<b>NCC 9-4</b>			<b>NSG 3290</b>			<b>University of Kansas</b>	<b>2742</b>
Crop identification and crop condition assessment for the FIREX/SAMEX program			Self consistent numerical simulation of plasma insulator interactions in space				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>			
06/01/82-01/31/83	FY83:	TOTAL: \$99,500	08/16/79-10/30/83	FY83:	TOTAL: \$202,571		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Ulaby, F. T.	JSC/Paris, J.	39-Env Sci, NEC	Enoch, J.	LERC/Purvis, C. K. 13-Physics			
			Wiseman, G. G.	LERC/Stevens, N. J.			
<b>NCC 9-6</b>			<b>NSG 4008</b>			<b>University of Kansas</b>	<b>2743</b>
Simulation of orbital imaging radar for soil moisture sensing			Analysis of structural components for ultra high speed aircraft				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>			
11/15/82-07/14/83	FY83: \$30,000	TOTAL: \$30,000	05/01/76-03/31/83	FY83:	TOTAL: \$45,416		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Ulaby, F. T.	JSC/Browne, I. D.	39-Env Sci, NEC	Smith, H.	ARC/Jenkins, J. M. 41-Aero Engr			
			Lameris, J.	ARC/Schuster, L. S.			
<b>NCC 9-7</b>			<b>NSG 4019</b>			<b>University of Kansas</b>	<b>2744</b>
Radar studies of agricultural crop in support of the FIREX/SAMEX program			Study of new flight test techniques				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>			
11/15/82-09/30/84	FY83: \$113,000	TOTAL: \$113,000	01/22/79-08/31/83	FY83:	TOTAL: \$240,603		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Ulaby, F. T.	JSC/Browne, I. D.	39-Env Sci, NEC	Roskam, J.	DFRF/Wilson, E. J. 41-Aero Engr			
			Rummer, D. I.	DFRF/Lawhead, A. D.			
<b>NGL 17-004-024</b>			<b>NSG 4028</b>			<b>University of Kansas</b>	<b>2745</b>
Research on the applications of satellite remote sensing			Modeling of aircraft performance from flight test results using dynamic test techniques				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>			
04/06/72-03/31/85	FY83: \$100,000	TOTAL: \$1,440,000	06/01/82-09/30/83	FY83: \$36,127	TOTAL: \$36,127		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Barr, B. G.	HQ-EL/Tuyahov, A. J. 39-Env Sci, NEC		Schweikhard, W. G.	ARC/Burcham, F. W. 41-Aero Engr			
			Yechout, T. R.	ARC/Redin, P. C.			
<b>NSG 1397</b>			<b>NAG 1-114</b>			<b>Wichita State University</b>	<b>2746</b>
Remote sensing of oceans			Theoretical and experimental studies of three dimensional flow interference and drag on general aviation aircraft				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>			
02/15/77-04/30/82	FY83:	TOTAL: \$211,969	01/01/81-09/30/83	FY83:	TOTAL: \$87,435		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Moore, R. K.	LARC/Schroeder, L. C. 33-Oceanography		Wentz, W. H.	LARC/Holmes, B. J. 41-Aero Engr			
Fung, A. K.			Ellis, D.				

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**KANSAS (Continued)**

**NAG 3-284** **Wichita State University** **2747**  
 Application of electromagnetic impulse de-icing to general aviation aircraft wings  
*Period* *Obligations*  
 05/15/82-10/30/83 FY83: \$244,987 TOTAL: \$317,595  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Zumwalt, G. W. LERC/Schmidt, H. W. 41-Aero Engr  
 Bernhart, W.  
 Schrag, R.

**NASW 3714** **Wichita State University** **2748**  
 A history of NASA's use of computers in space flight  
*Period* *Obligations*  
 02/15/83-12/31/85 FY83: \$102,974 TOTAL: \$102,974  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Tomayko, J. E. HQ-LB/Chappelle, T.  
 29-Math/Cmputer, NEC  
 HQ-NI/Rowsome, F. H.

**NCC 1-31** **Wichita State University** **2749**  
 Research in engine nozzle design for a hypersonic flight vehicle  
*Period* *Obligations*  
 01/01/80-01/31/82 FY83: TOTAL: \$56,915  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Zumwalt, G. W. LARC/Weidner, J. P. 41-Aero Engr  
 LARC/Watts, J. D.

**NSG 1575** **Wichita State University** **2750**  
 Supersonic burning in separated flow regions  
*Period* *Obligations*  
 11/01/78-10/31/81 FY83: TOTAL: \$70,068  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Zumwalt, G. W. LARC/Rogers, R. C. 41-Aero Engr

**NSG 3277** **Wichita State University** **2751**  
 Feasibility studies of spoiler and aileron control systems for large wind turbine  
*Period* *Obligations*  
 06/01/79-08/30/84 FY83: \$165,379 TOTAL: \$567,676  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Wentz, W. H., Jr. LERC/Savino, J. M. 41-Aero Engr  
 Snyder, M. H.

**KENTUCKY**

**NAS 8-35180** **Eastern Kentucky University** **2752**  
 Proton and neutron activation of metal samples in low Earth orbit  
*Period* *Obligations*  
 01/18/83-08/31/84 FY83: \$6,500 TOTAL: \$6,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Laird, C. E. MSFC/Fishman, G. J. 13-Physics  
 MSFC/Parnell, T. A.

**NAGW 447** **Murray State University - Ky.** **2753**  
 Geological applications of radar data for the terrestrial planets  
*Period* *Obligations*  
 04/15/83-04/14/84 FY83: \$10,000 TOTAL: \$10,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Clark, P. E. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAS13-200** **Murray State University - Ky.** **2754**  
 Determination of the utility of remote sensing data for land use/cover analysis in the lower Appalachia region  
*Period* *Obligations*  
 06/21/82-08/19/83 FY83: TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Weber, N. V. NSTL/Severs, T. L. 32-Geological Sci

**NAG 3-289** **Northern Kentucky University** **2755**  
 Spectroscopic and energy investigations of a microwave induced plasma  
*Period* *Obligations*  
 05/20/82-06/19/83 FY83: TOTAL: \$19,975  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hawkins, C. E. LERC/Nakanishi, S. 19-Phys Sci, NEC

**NAG 3-450** **Northern Kentucky University** **2756**  
 Energy losses in a warm gas  
*Period* *Obligations*  
 07/15/83-12/31/83 FY83: \$10,672 TOTAL: \$10,672  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hawkins, C. E. LERC/Nakanishi, S. 19-Phys Sci, NEC

**NAG 3-258** **University of Kentucky** **2757**  
 Flame spreading in reduced gravity  
*Period* *Obligations*  
 02/20/82-08/14/84 FY83: \$39,966 TOTAL: \$69,966  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Altenkirch, R. A. LERC/Vento, D. M. 39-Env Sci, NEC

**NAG 5-239** **University of Kentucky** **2758**  
 Research of carbon in planetary nebulae  
*Period* *Obligations*  
 06/01/82-11/30/83 FY83: \$5,000 TOTAL: \$6,225  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Ferland, G. J. GSFC/Kondo, Y. 11-Astronomy  
 Bruhweiler, F. C.

**NAS 9-15452** **University of Kentucky** **2759**  
 Development of limb volume measuring system  
*Period* *Obligations*  
 11/01/77-09/30/83 FY83: TOTAL: \$247,654  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bhagat, P. K. JSC/Booher, C. R. 56-Medical Sciences

**NAS 9-16034** **University of Kentucky** **2760**  
 Lower limb volume measurements in space using an ultrasonic technique  
*Period* *Obligations*  
 01/17/80-01/31/82 FY83: TOTAL: \$31,940  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bhagat, P. K. JSC/Peck, E. E. 59-Life Sci, NEC

**NASA'S UNIVERSITY PROGRAM  
KENTUCKY (Continued)**

<b>NAS 9-16045</b>	<b>University of Kentucky</b>	<b>2761</b>
Prevention of space flight deconditioning by application of whole body oscillating accelerator		
<i>Period</i>	<i>Obligations</i>	
01/17/80-05/31/84	FY83: TOTAL: \$43,677	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bhattacharga, A.	JSC/Peck, E. E.	59-Life Sci, NEC

<b>NASW 3367</b>	<b>University of Kentucky</b>	<b>2762</b>
Operation of a technology applications program (TAP)		
<i>Period</i>	<i>Obligations</i>	
07/01/80-06/30/84	FY83: \$3 TOTAL: \$484,937	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Strong, F.	HQ-LG/Ault, L. A.	99-Multi-Discip

<b>NSG 1424</b>	<b>University of Kentucky</b>	<b>2763</b>
A model for methane and carbon monoxide incorporating a time-varying wind field and tropopause height		
<i>Period</i>	<i>Obligations</i>	
07/01/77-12/31/83	FY83: TOTAL: \$157,648	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Peters, L. K.	LARC/Reichle, H. G., Jr.	31-Atmos Sci
	LARC/Hypes, W. D.	

<b>NSG 3114</b>	<b>University of Kentucky</b>	<b>2764</b>
Study effects of buoyancy on flame spreading across beds of solid fuel		
<i>Period</i>	<i>Obligations</i>	
07/01/76-06/30/83	FY83: TOTAL: \$165,187	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Altenkirch, R. A.	LERC/Cochran, T. H.	46-Mech Engr
	LERC/Labus, T. L.	

<b>NAGW 70</b>	<b>University of Louisville</b>	<b>2765</b>
Space biology research project		
<i>Period</i>	<i>Obligations</i>	
06/01/80-02/28/84	FY83: \$200,000 TOTAL: \$738,964	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Musacchia, X. J.	HQ-EB/Halstead, T. W.	51-Biological Sci

<b>NCA 2-400101</b>	<b>University of Louisville</b>	<b>2768</b>
Effect of simulated space flight on interferon production and action		
<i>Period</i>	<i>Obligations</i>	
11/01/80-10/31/82	FY83: TOTAL: \$40,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rubertone, J. A.	ARC/Mandel, A. D.	51-Biological Sci
	ARC/Holton, E. R.	

<b>NCC 2-213</b>	<b>University of Louisville</b>	<b>2769</b>
Development and testing of a mouse simulated space flight model		
<i>Period</i>	<i>Obligations</i>	
11/01/82-10/31/83	FY83: \$25,920 TOTAL: \$25,920	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sonnenfeld, G.	ARC/Mandel, A. D.	51-Biological Sci

<b>NSG 2325</b>	<b>University of Louisville</b>	<b>2770</b>
Renal function, water and electrolyte balance and intestinal transport in hypokinetic animals		
<i>Period</i>	<i>Obligations</i>	
06/01/78-10/31/83	FY83: \$48,500 TOTAL: \$228,268	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Musacchia, X. J.	ARC/Holton, E. M.	51-Biological Sci

<b>NAS 8-34424</b>	<b>Western Kentucky University</b>	<b>2771</b>
Ray tracing of Jovian low frequency radiation		
<i>Period</i>	<i>Obligations</i>	
07/10/81-08/31/83	FY83: TOTAL: \$37,917	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Six, N. F.	MSFC/Green, J. L.	31-Atmos Sci
	MSFC/Chappell, R.	

<b>NSG 5238</b>	<b>Western Kentucky University</b>	<b>2772</b>
Ultraviolet observations of high excitation planetary nebulae		
<i>Period</i>	<i>Obligations</i>	
02/15/78-08/14/84	FY83: TOTAL: \$41,508	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hackney, K. R.	GSFC/Boggess, A.	11-Astronomy
Hackney, R. L.		

**LOUISIANA**

Life sciences flight experiment: Renal and musculo-skeletal responses to weightlessness and readaptation to normal gravitational forces in rats			<b>NAG 8-2</b>		<b>Grambling State University</b>	<b>2773</b>
			Turbulence in transient solar phenomena			
<i>Period</i>		<i>Obligations</i>	<i>Period</i>		<i>Obligations</i>	
01/17/80-11/16/81	FY83:	TOTAL: \$30,264	01/04/80-07/01/82	FY83:	TOTAL: \$68,140	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Musacchia, X. J.	ARC/Ferandin, J. A.	51-Biological Sci	Cross, M. A.	MSFC/Tandberghanssen, E. A.		
			Johnson, J. A.		13-Physics	

<b>NAS 5-26504</b>			<b>University of Louisville</b>	<b>2767</b>
Noss computer performance studies				
<i>Period</i>		<i>Obligations</i>		
02/23/81-10/31/83	FY83: \$59,911	TOTAL: \$177,027		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Shelton, R. D.	GSFC/Laids, S. C.	22-Computer Science		

<b>NAG 3-477</b>			<b>Louisiana State University - Baton Rouge</b>	<b>2774</b>
Shock tube study of the fuel structure effects on the chemical kinetic mechanisms responsible for soot formation				
<i>Period</i>		<i>Obligations</i>		
10/25/83-10/24/84	FY83: \$89,537	TOTAL: \$89,537		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Frenklach, M.	LERC/Haggard, J. B.	43-Chem Engr		

# **NASA'S UNIVERSITY PROGRAM** **LOUISIANA (Continued)**

## **NAG 5-71 Louisiana State University - Baton Rouge 2775**

Ultraviolet spectroscopy of selected astronomical sources

Period	Obligations	
07/01/80-01/31/84	FY83: \$17,200	TOTAL: \$48,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Drilling, J. S.	GSFC/Kondo, Y.	11-Astronomy
Schoenberger, D.		

## **NAG 5-197 Louisiana State University - Baton Rouge 2776**

Search for cataclysmic binaries containing strongly magnetic white dwarfs

Period	Obligations	
07/01/81-03/31/84	FY83: \$15,400	TOTAL: \$30,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Chanmugam, G.	GSFC/Kondo, Y.	11-Astronomy
Luck, R. E.		

## **NAGW 48 Louisiana State University - Baton Rouge 2777**

Electron positive ion interaction

Period	Obligations	
04/01/80-03/30/84	FY83: \$40,000	TOTAL: \$160,700
Prin. Invest.	NASA Tech. Officer	CASE Category
Henry, J. W.	HQ-EL/Murphy, R. E.	21-Mathematics
	HQ-EL/Brunk, W. E.	

## **NAGW 473 Louisiana State University - Baton Rouge 2778**

Instability features on the surface of Mars

Period	Obligations	
06/15/83-06/14/84	FY83: \$30,000	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Nummedal, D.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

## **NAGW 481 Louisiana State University - Baton Rouge 2779**

Laboratory astrophysics projects

Period	Obligations	
08/01/83-07/31/84	FY83: \$33,000	TOTAL: \$33,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Henry, R. J.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

## **NAS 3-23542 Louisiana State University - Baton Rouge 2780**

Shock tube study of the fuel molecular structure effects on the chemical kinetic mechanisms for soot formation

Period	Obligations	
09/28/82-04/15/84	FY83:	TOTAL: \$81,640
Prin. Invest.	NASA Tech. Officer	CASE Category
Frenklach, M.	LERC/Haggard, J.	43-Chem Engr

## **NAS13-148 Louisiana State University - Baton Rouge 2781**

Technology transfer to sub-state levels of government

Period	Obligations	
05/01/80-08/31/82	FY83:	TOTAL: \$145,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Whitehurst, C. A.	NSTL/Brannon, D. P.	32-Geological Sci

## **NGT 19-001-800 Louisiana State University - Baton Rouge 2782**

Graduate student researchers program

Period	Obligations	
09/01/80-12/31/82	FY83:	TOTAL: \$26,847
Prin. Invest.	NASA Tech. Officer	CASE Category
Rouse, L. J., Jr.	HQ-LB/Carter, C. H.	33-Oceanography

## **NAS 9-16477 Louisiana State University - Shreveport 2783**

Anti-motion sickness drug research

Period	Obligations	
10/01/81-01/31/83	FY83:	TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wood, C. D.	JSC/Homick, J. L.	56-Medical Sciences
Manno, J.		
Bowen, J.		

## **NAS 9-16801 Louisiana State University - Shreveport 2784**

Experimental studies to evaluate behavioral and performance side effects of several anti-motion sickness medications

Period	Obligations	
09/30/82-10/31/83	FY83: \$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wood, C. D.	JSC/Homick, J. L.	59-Life Sci, NEC

## **NSG 7542 Louisiana State University - Shreveport 2785**

Paleohydrology of Mars

Period	Obligations	
04/01/79-11/30/82	FY83:	TOTAL: \$108,489
Prin. Invest.	NASA Tech. Officer	CASE Category
Nummedal, D.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

## **NAG 1-162 Louisiana Tech University 2786**

Study of photocatalytic effects of aqueous suspensions of platinized semiconductor materials on reaction rates of candidate redox reactions

Period	Obligations	
06/01/81-05/31/82	FY83:	TOTAL: \$39,667
Prin. Invest.	NASA Tech. Officer	CASE Category
Miles, A. M.	LARC/Byvik, C. E.	12-Chemistry
	LARC/Conway, E. J.	

## **NSG 7534 Northeast Louisiana University 2787**

Stratigraphy and crater morphology

Period	Obligations	
02/01/79-06/14/84	FY83: \$15,000	TOTAL: \$84,406
Prin. Invest.	NASA Tech. Officer	CASE Category
Dehon, R.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

## **NAG 8-4 Southern Univ & A&M College 2788**

Crystal structure and catalytic properties of noble metal-rare earth alloys

Period	Obligations	
02/19/80-08/31/82	FY83:	TOTAL: \$78,076
Prin. Invest.	NASA Tech. Officer	CASE Category
Mohanty, R. C.	MSFC/Munaf, P. M.	13-Physics
Collins, W. E.	MSFC/Kent, M. I.	

**NASA'S UNIVERSITY PROGRAM**  
**LOUISIANA (Continued)**

**NAS 1-15335 Southern Univ & A&M College 2789**  
 Atomic oxygen stimulated outgassing experiment for the long duration exposure facility  

Period	Obligations
04/07/78-07/15/84	FY83: \$11,000 TOTAL: \$61,426
Prin. Invest.	NASA Tech. Officer CASE Category
Scott, R. L.	LARC/Carter, D. J., Jr. 31-Atmos Sci

**NASW 3344 Southern Univ & A&M College 2790**  
 Return on automatic data processing investment  

Period	Obligations
03/14/80-12/18/82	FY83: TOTAL: \$143,011
Prin. Invest.	NASA Tech. Officer CASE Category
Roquemore, L.	HQ-NS/Weaver, A. 22-Computer Science
	HQ-NS/Rice, R.

**NASW 3786 Southern Univ & A&M College 2791**  
 Programming documentation checkout and procedures to accomplish automation of the financial operating plans, and budget line items  

Period	Obligations
06/01/83-05/31/84	FY83: \$44,250 TOTAL: \$44,250
Prin. Invest.	NASA Tech. Officer CASE Category
Roquemore, L.	HQ-NS/Lewis, D. 22-Computer Science

**NAG 1-356 Southern University - Shreveport 2792**  
 Real-time computer controlled study of the photocatalytic effects of powdered semiconductors suspensions on the oxidation of cyanide  

Period	Obligations
04/06/83-04/05/84	FY83: \$30,000 TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer CASE Category
Miles, A. M.	LARC/Byvik, C. E. 12-Chemistry
	LARC/Conway, E. J.

**NAG 2-101 Tulane University 2793**  
 Localization and histochemical and physiologic characteristics of the central emetic apparatus related to motion sickness  

Period	Obligations
03/01/81-02/29/84	FY83: \$43,550 TOTAL: \$142,550
Prin. Invest.	NASA Tech. Officer CASE Category
Brizze, K. R.	ARC/Mehler, W. R. 56-Medical Sciences

**NCA 2-800001 Tulane University 2794**  
 Evolutionary relationships among bacteria: Thermophiles and mesophiles  

Period	Obligations
03/01/80-09/30/82	FY83: TOTAL: \$10,908
Prin. Invest.	NASA Tech. Officer CASE Category
Johnson, E. J.	ARC/MacElroy, R. D. 51-Biological Sci

**NCA 2-800301 Tulane University 2795**  
 Evolutionary relationships among gene systems  

Period	Obligations
10/01/82-09/30/84	FY83: \$6,500 TOTAL: \$6,500
Prin. Invest.	NASA Tech. Officer CASE Category
Johnson, E. J.	ARC/MacElroy, R. D. 51-Biological Sci

**NSG 1648 University of New Orleans 2796**  
 Study on one and two dimensional filtering and deconvolution algorithms for a streaming array computer  

Period	Obligations
09/01/79-06/30/83	FY83: TOTAL: \$36,864
Prin. Invest.	NASA Tech. Officer CASE Category
Ioup, G. E.	LARC/Lambiotte, J. J., Jr.
	LARC/Shoosmith, J. N. 21-Mathematics

**NAG 1-271 University of Southwestern Louisiana 2797**  
 Unified data flow model for Fault tolerant  

Period	Obligations
05/01/82-01/31/84	FY83: \$43,761 TOTAL: \$93,761
Prin. Invest.	NASA Tech. Officer CASE Category
Kavi, K. M.	LARC/Lupton, A. O.
Rao, T. R.	22-Computer Science
	LARC/Bavuso, S. J.

**MAINE**

**NAS 5-26574 University of Maine - Orono 2798**  
 Provide computer time  

Period	Obligations
06/03/81-09/30/82	FY83: TOTAL: \$9,930
Prin. Invest.	NASA Tech. Officer CASE Category
Byther, T.	GSFC/Imhoff, M. 22-Computer Science

**NCC 1-70 University of Maine - Orono 2799**  
 Fatigue behavior of adhesively bonded joints  

Period	Obligations
09/01/82-08/31/83	FY83: \$500 TOTAL: \$60,134
Prin. Invest.	NASA Tech. Officer CASE Category
Mall, S.	LARC/Davidson, J. R. 41-Aero Engr
	LARC/Johnson, W. S.

**MARYLAND**

**NAS 5-27366 Bowie State College 2800**  
 Demonstration of frame based concepts  

Period	Obligations
09/30/82-09/30/83	FY83: TOTAL: \$17,376
Prin. Invest.	NASA Tech. Officer CASE Category
Srivastava, S.	GSFC/Truszkowski, W. F.
	22-Computer Science

**NCA 5-96 Bowie State College 2801**  
 Training of students in engineering related subjects  

Period	Obligations
08/16/83-08/15/84	FY83: \$34,145 TOTAL: \$34,145
Prin. Invest.	NASA Tech. Officer CASE Category
Ponds, J. W.	GSFC/Mundy, J. R. 49-Engr, NEC

**NASA'S UNIVERSITY PROGRAM  
MARYLAND (Continued)**

**NGR 21-027-004** **Bowie State College** **2802**  
Research in numerical integration  
*Period* *Obligations*  
05/25/71-09/30/82 FY83: TOTAL: \$161,872  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Srivastava, S. GSFC/Maury, J. L. 21-Mathematics

**NGR 21-027-010** **Bowie State College** **2803**  
Holographic gratings for spectrographic applications study of aberrations  
*Period* *Obligations*  
05/14/73-07/31/84 FY83: \$19,757 TOTAL: \$172,923  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bhatia, M. S. GSFC/Caruso, A. J. 13-Physics  
GSFC/Osantowski, J. F.

**NGT 21-027-012** **Bowie State College** **2804**  
Training of undergraduate students in sciences and engineering  
*Period* *Obligations*  
06/01/74-03/31/84 FY83: \$49,680 TOTAL: \$371,243  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kirksey, C. H. GSFC/Chapman, J. W., Sr. 99-Multi-Discip

**NSG 5009** **Bowie State College** **2805**  
Characterization of the physico-chemical properties of polymeric materials for aerospace flights  
*Period* *Obligations*  
07/01/74-02/14/84 FY83: \$91,767 TOTAL: \$370,110  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rock, M. GSFC/Rodriguez, G. E. 12-Chemistry  
Vasanth, K. L. GSFC/Halpert, G.

**NSG 5051** **Coppin State College** **2806**  
Research on the failure mechanism and other factors leading to reduce cycle life in aerospace nickel-cadmium cells  
*Period* *Obligations*  
05/01/75-07/14/84 FY83: \$20,120 TOTAL: \$263,285  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McDermott, P. P. GSFC/Rodriguez, G. E. 43-Chem Engr  
Sommerfeldt, E. GSFC/Halpert, G.

**NAG 1-211** **Johns Hopkins University** **2807**  
Ultrasonic evaluation of orthopedic implant materials and devices  
*Period* *Obligations*  
09/01/81-08/31/84 FY83: \$30,000 TOTAL: \$80,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Green, R. E., Jr. LARC/Heyman, J. S. 47-Materials Engr  
LARC/Crantrell, J. H., Jr.

**NAG 1-399** **Johns Hopkins University** **2808**  
Microstructures and properties of rapidly solidified alloys  
*Period* *Obligations*  
08/10/83-10/09/83 FY83: \$13,435 TOTAL: \$13,435  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shechtman, D. LARC/Lisagor, W. B. 47-Materials Engr  
Horowitz, E. LARC/Brewer, W. D.

**NAG 2-139** **Johns Hopkins University** **2809**  
Behavioral and biological interactions with small groups in confined microsocieties  
*Period* *Obligations*  
11/01/81-10/31/83 FY83: \$95,000 TOTAL: \$185,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Brady, J. V. ARC/Patton, R. M. 62-Social Aspects  
Emurian, H. H.

**NAG 5-32** **Johns Hopkins University** **2810**  
Interpretation and delineation of the Earth's gravity field  
*Period* *Obligations*  
04/01/80-04/30/84 FY83: \$40,000 TOTAL: \$162,013  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Marsh, B. D. GSFC/Welker, J. 32-Geological Sci  
Fisher, G. W.

**NAG 5-35** **Johns Hopkins University** **2811**  
Petrologic and geophysical study of the source of long wavelength crustal magnetic anomalies  
*Period* *Obligations*  
05/01/80-04/30/83 FY83: TOTAL: \$74,462  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Marsh, B. D. GSFC/Kouns, C. W. 32-Geological Sci  
Schlinger, C. GSFC/Thomas, H. H.

**NAG 5-157** **Johns Hopkins University** **2812**  
Energy transfer in the active medium of submillimeter lasers  
*Period* *Obligations*  
04/15/81-04/14/82 FY83: TOTAL: \$12,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Robinson, D. W. GSFC/Lawandy, N. M. 13-Physics  
GSFC/Button, J.

**NAG 5-200** **Johns Hopkins University** **2813**  
Application of mixed physical statistical models  
*Period* *Obligations*  
08/01/81-05/31/84 FY83: \$40,000 TOTAL: \$140,544  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Phillips, O. M. GSFC/Susskind, J. 31-Atmos Sci  
Munteanu, M. J.

**NAG 5-327** **Johns Hopkins University** **2814**  
Optical studies of potential spectroscopic instruments  
*Period* *Obligations*  
06/01/83-05/31/84 FY83: \$37,000 TOTAL: \$37,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Moos, H. W. GSFC/Boggess, A. 11-Astronomy

**NAG 5-356** **Johns Hopkins University** **2815**  
Optical communication with laser diode arrays  
*Period* *Obligations*  
08/01/83-02/22/85 FY83: \$38,528 TOTAL: \$38,528  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Davidson, F. M. GSFC/Fuhr, P. L. 45-Elec Engr  
GSFC/Caudill, L. O.

**NASA'S UNIVERSITY PROGRAM**  
**MARYLAND (Continued)**

**NAG 5-619**                      **Johns Hopkins University**                      **2816**  
 Rocket and laboratory experiments in aeronomy and astronomy  
*Period*                                      *Obligations*  
 03/01/83-02/29/84                      FY83: \$460,000                      TOTAL: \$460,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Feldman, P. D.                      GSFC/Early, L. J.                      13-Physics  
 Davidsen, A. F.                      GSFC/Pless, R. H.  
 Fastie, W. G.

**NAGW 16**                      **Johns Hopkins University**                      **2817**  
 An ultraviolet imaging detector for shuttle astronomy  
*Period*                                      *Obligations*  
 12/01/79-04/30/83                      FY83:                      TOTAL: \$115,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Moos, H. W.                      HQ-EZ/Weiler, E. J.                      11-Astronomy  
    HQ-EZ/Bogges, N. W.

**NAGW 154**                      **Johns Hopkins University**                      **2818**  
 Investigation of composition and dynamics of the Jovian magnetosphere  
*Period*                                      *Obligations*  
 03/15/81-04/14/84                      FY83: \$250,000                      TOTAL: \$515,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Krimigis, S. M.                      HQ-EL/Quaide, W. L.                      13-Physics  
    HQ-EL/Evans, N.

**NAGW 264**                      **Johns Hopkins University**                      **2819**  
 Analysis of thermal iron ions measured in the peaks of solar wind streams  
*Period*                                      *Obligations*  
 02/01/82-12/31/83                      FY83: \$40,000                      TOTAL: \$80,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Roelof, E. C.                      HQ-EE/Lynch, J. T.                      19-Phys Sci, NEC  
    HQ-EE/Schmerling, E. R.

**NAGW 304**                      **Johns Hopkins University**                      **2820**  
 Surface wave and turbulence phenomena associated with remote sensing  
*Period*                                      *Obligations*  
 03/18/82-03/17/83                      FY83:                      TOTAL: \$61,898  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Phillips, O. M.                      HQ-EE/McGoldrick, L. F.  
 Kitaigorodskii H. S.                      HQ-EE/Wilson, W. S.                      33-Oceanography

**NAGW 383**                      **Johns Hopkins University**                      **2821**  
 Studies of planetary external atmospheres  
*Period*                                      *Obligations*  
 10/15/82-10/14/83                      FY83: \$50,000                      TOTAL: \$50,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Brown, R. A.                      HQ-EL/Brunk, W. E.                      11-Astronomy

**NAGW 425**                      **Johns Hopkins University**                      **2822**  
 Wind erosion of frozen slopes and dune formation  
*Period*                                      *Obligations*  
 02/15/83-02/14/84                      FY83: \$11,721                      TOTAL: \$11,721  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Garsh, B. D.                      HQ-EL/Boyce, J. M.                      32-Geological Sci  
    HQ-EL/Holt, H. E.

**NAGW 497**                      **Johns Hopkins University**                      **2823**  
 Study of magnetosphere structure and liner magnetosphere storm effects  
*Period*                                      *Obligations*  
 07/01/83-06/30/84                      FY83: \$50,000                      TOTAL: \$50,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Williams, D. J.                      HQ-EE/Lynch, J. T.                      13-Physics  
 Sperser, T. W.                      HQ-EE/Wiskerchein, M. J.  
 Lyons, L. R.

**NAS 5-11415**                      **Johns Hopkins University**                      **2824**  
 Atmosphere Explorer photoelectron and energetic particle experiment  
*Period*                                      *Obligations*  
 08/15/74-09/30/83                      FY83:                      TOTAL: \$1,882,285  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Doering, J. P.                      GSFC/Bullock, G. D.                      31-Atmos Sci

**NAS 5-23732**                      **Johns Hopkins University**                      **2825**  
 Development of a command system for a fully implantable human tissue stimulator  
*Period*                                      *Obligations*  
 10/26/76-05/30/84                      FY83:                      TOTAL: \$525,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Long, D.                      GSFC/Friedman, D. S.  
 Fishell, R. E.                      56-Medical Sciences

**NAS 5-25358**                      **Johns Hopkins University**                      **2826**  
 Grating facility use  
*Period*                                      *Obligations*  
 10/01/78-12/31/83                      FY83:                      TOTAL: \$68,200  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Fastie, W. G.                      GSFC/Fowler, W. S.                      13-Physics

**NAS 5-26057**                      **Johns Hopkins University**                      **2827**  
 Generate an investigation development plan and establish the preliminary interfaces between the orbiter and instrument for the far ultraviolet telescope spectrometer  
*Period*                                      *Obligations*  
 02/06/80-06/30/82                      FY83:                      TOTAL: \$484,292  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Davidson, A. F.                      GSFC/Young, E. W.                      11-Astronomy

**NAS 5-26848**                      **Johns Hopkins University**                      **2828**  
 Multi-spectral auroral imaging device for OPEN (origin of plasmas in the Earth's neighborhood)  
*Period*                                      *Obligations*  
 12/20/82-09/15/84                      FY83: \$180,000                      TOTAL: \$180,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Feldman, P. D.                      GSFC/O'brien, J. J.                      19-Phys Sci, NEC

**NAS 5-27000**                      **Johns Hopkins University**                      **2829**  
 Development phase of the Hopkins ultraviolet telescope (HUT)  
*Period*                                      *Obligations*  
 09/21/81-03/31/87                      FY83: \$200,000                      TOTAL: \$2,960,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Davidsen, A. F.                      MSFC/Owens, J.                      11-Astronomy

**NASA'S UNIVERSITY PROGRAM**  
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**NAS 8-32903**      **Johns Hopkins University**      **2830**  
Scientific investigations in support of the space telescope project

Period	Obligations
02/01/78-12/31/84	FY83: TOTAL: \$151,300
Prin. Invest.	NASA Tech. Officer CASE Category
Fastie, W. G.	MSFC/O'dell, C. R. 11-Astronomy

**NAS 8-35348**      **Johns Hopkins University**      **2831**  
Fiber optical quadrature study

Period	Obligations
03/24/83-09/30/84	FY83: \$600,000 TOTAL: \$600,000
Prin. Invest.	NASA Tech. Officer CASE Category
Fastie, W. G.	MSFC/Humphreys, J. T. 11-Astronomy

**NAS 9-16030**      **Johns Hopkins University**      **2832**  
Effect of weightlessness on diurnal pattern of resin and aldosterone concentration in plasma

Period	Obligations
01/17/80-01/31/82	FY83: TOTAL: \$35,278
Prin. Invest.	NASA Tech. Officer CASE Category
Walker, W. G.	JSC/White, T. 59-Life Sci, NEC

**NAS 9-16036**      **Johns Hopkins University**      **2833**  
Life science flight experiment: Factor affecting respiratory tract particle deposition and clearance in the space environment

Period	Obligations
01/17/80-01/31/82	FY83: TOTAL: \$23,237
Prin. Invest.	NASA Tech. Officer CASE Category
Proctor, D. F.	JSC/French, B. 59-Life Sci, NEC

**NAS 9-16703**      **Johns Hopkins University**      **2834**  
Bedrest in healthy women: Effects of menstrual function and oral contraceptives

Period	Obligations
07/01/82-06/30/83	FY83: TOTAL: \$110,000
Prin. Invest.	NASA Tech. Officer CASE Category
Fortney, S. M.	JSC/Logan, J. 51-Biological Sci

**NASW 3691**      **Johns Hopkins University**      **2835**  
Space telescope historical project

Period	Obligations
11/15/82-11/14/83	FY83: \$49,540 TOTAL: \$49,540
Prin. Invest.	NASA Tech. Officer CASE Category
Kargon, R. H.	HQ-EZ/Stencel, R. E. 11-Astronomy
	HQ-EZ/Weiler, E. J.

**NCC 5-24**      **Johns Hopkins University**      **2836**  
Dye laser traveling wave amplifier research

Period	Obligations
12/01/80-12/31/83	FY83: \$40,000 TOTAL: \$129,026
Prin. Invest.	NASA Tech. Officer CASE Category
Davidson, F.	GSFC/Degnan, J. J. 49-Engr, NEC

**NGR 21-001-001**      **Johns Hopkins University**      **2837**  
Rocket and laboratory experiments and analysis on ultraviolet spectra of upper atmosphere

Period	Obligations
08/01/61-12/31/83	FY83: TOTAL: \$6,001,126
Prin. Invest.	NASA Tech. Officer CASE Category
Feldman, P. D.	GSFC/Early, L. J. 11-Astronomy
Davidson, A. F.	WFC/Pless, R. H.
Fastie, W. G.	

**NGR 21-001-111**      **Johns Hopkins University**      **2838**  
Small group performance and effects of contingency management in a programmed environment

Period	Obligations
03/31/72-10/31/81	FY83: TOTAL: \$1,036,294
Prin. Invest.	NASA Tech. Officer CASE Category
Brady, J. V.	ARC/Patton, R. M. 62-Social Aspects
Emurian, H. H.	

**NGT 21-001-800**      **Johns Hopkins University**      **2839**  
Graduate student researchers program

Period	Obligations
09/01/80-08/31/83	FY83: TOTAL: \$29,815
Prin. Invest.	NASA Tech. Officer CASE Category
Davidson, A. F.	HQ-LB/Carter, C. H. 41-Aero Engr

**NGT 21-001-801**      **Johns Hopkins University**      **2840**  
NASA graduate student researchers program

Period	Obligations
09/01/83-08/31/84	FY83: \$12,480 TOTAL: \$12,480
Prin. Invest.	NASA Tech. Officer CASE Category
Robinson, D. W.	HQ-LB/Owens, F. C. 12-Chemistry

**NGT 21-001-980**      **Johns Hopkins University**      **2841**  
Propagation of disturbances on the ocean surface graduate student researchers program

Period	Obligations
09/01/80-08/31/82	FY83: TOTAL: \$23,405
Prin. Invest.	NASA Tech. Officer CASE Category
Phillips, O.	HQ-LB/Carter, C. H. 13-Physics

**NGT 21-001-981**      **Johns Hopkins University**      **2842**  
Intermittent/transient faults in computer based

Period	Obligations
06/01/81-07/31/82	FY83: TOTAL: \$8,675
Prin. Invest.	NASA Tech. Officer CASE Category
Judd, B. R.	HQ-LB/Carter, C. H. 13-Physics

**NSG 1442**      **Johns Hopkins University**      **2843**  
Intermittent/transient faults in computer based systems

Period	Obligations
09/15/77-09/30/84	FY83: \$162,668 TOTAL: \$444,987
Prin. Invest.	NASA Tech. Officer CASE Category
Masson, G. M.	LARC/Pitts, F. L. 45-Elec Engr
	LARC/Belcastro, C. M.



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**NSG 2303** **Johns Hopkins University** **2844**  
 Experiments on sheared or strained turbulence  
*Period* *Obligations*  
 02/01/78-07/31/82 FY83: TOTAL: \$157,387  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Corrsin, S. ARC/Rubesin, M. W. 41-Aero Engr

**NSG 5074** **Morgan State University** **2851**  
 Research calibration of photographic and spectrographic films  
*Period* *Obligations*  
 10/01/75-08/31/84 FY83: \$219,087 TOTAL: \$366,976  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hammond, E. C., Jr. GSFC/Baker, G. R. 11-Astronomy

**NSG 5393** **Johns Hopkins University** **2845**  
 Studies of the ultraviolet spectra of astronomical sources  
*Period* *Obligations*  
 07/01/79-12/31/83 FY83: \$38,350 TOTAL: \$190,400  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Moos, H. W. GSFC/Kondo, Y. 11-Astronomy  
 Durrance, S. T.  
 Feldman, P. D.

**NSG 5401** **Morgan State University** **2852**  
 Research of high temperature solar converter  
*Period* *Obligations*  
 08/01/79-06/30/82 FY83: TOTAL: \$90,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Oliver, F. W. GSFC/Duncan, C. H. 31-Atmos Sci  
 Ascher, G.

**NSG 7055** **Johns Hopkins University** **2846**  
 Satellite data analysis  
*Period* *Obligations*  
 01/01/74-12/31/83 FY83: \$100,040 TOTAL: \$779,040  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Potemra, T. A. HQ-EE/Lynch, J. T. 13-Physics  
 HQ-EE/Schmerling, E. R.

**NAG 5-267** **Towson State University** **2853**  
 External-to-conceptual mapping construction for database uniformation  
*Period* *Obligations*  
 09/01/82-08/31/84 FY83: \$23,179 TOTAL: \$33,672  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Grant, J. H. GSFC/Smith, P. H. 22-Computer Science

**NAG 5-12** **Morgan State University** **2847**  
 Relating thematic mapper bands to agronomics variables for soybeans and corn  
*Period* *Obligations*  
 04/01/80-03/31/83 FY83: TOTAL: \$62,962  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Fan, C. J. GSFC/Tucker, C. J. 39-Env Sci, NEC

**NAG 2-100** **Univ of Maryland Baltimore Profsnl School** **2854**  
 Gonadal steroids and muscle atrophy  
*Period* *Obligations*  
 01/15/81-05/31/84 FY83: \$52,379 TOTAL: \$139,909  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Max, S. R. ARC/Ellis, S. 51-Biological Sci

**NAG 5-14** **Morgan State University** **2848**  
 Evaluation of the quality of rainfall intensity estimates  
*Period* *Obligations*  
 03/01/80-02/28/82 FY83: TOTAL: \$42,532  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Knox, N. GSFC/Laughlin, C. R. 31-Atmos Sci  
 GSFC/Neil, E. A.

**NAG 1-24** **University of Maryland - College Park** **2855**  
 An experimental investigation of the effects on the near wall turbulent boundary layer structure by drag reducing flat plate surface geometry changes  
*Period* *Obligations*  
 01/15/80-07/14/83 FY83: TOTAL: \$105,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Wallace, J. M. LARC/Walsh, M. J. 41-Aero Engr  
 LARC/Hefner, J. N.

**NAS 5-23558** **Morgan State University** **2849**  
 The investigation, identification, analysis and interpretation of new possibilities in transfer technology  
*Period* *Obligations*  
 06/01/76-01/31/84 FY83: TOTAL: \$136,393  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Taylor, J. H. GSFC/Friedman, D. S. 49-Engr, NEC

**NAG 1-51** **University of Maryland - College Park** **2856**  
 Research in problem solving systems  
*Period* *Obligations*  
 06/01/80-08/31/82 FY83: TOTAL: \$45,839  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Minker, J. LARC/Barker, L. K. 22-Computer Science  
 LARC/Hankins, W. W.

**NGT 21-025-080** **Morgan State University** **2850**  
 The 10th summer research participation program  
*Period* *Obligations*  
 04/01/80-06/30/84 FY83: \$60,805 TOTAL: \$239,355  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Proctor, N. K. GSFC/Mundy, J. R. 99-Multi-Discip  
 HQ-LC/Pohly, J. G.

**NAG 1-151** **University of Maryland - College Park** **2857**  
 Properties of large nearly perfect crystals at very low temperatures  
*Period* *Obligations*  
 02/15/81-12/31/82 FY83: TOTAL: \$65,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Weber, J. LARC/Singh, J. J. 13-Physics  
 Richard, J. P. LARC/Hypes, W. D.

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**NAG 1-230 University of Maryland - College Park 2858**  
 Numerical study of turbulent boundary layers

Period	Obligations	
01/01/82-06/30/83	FY83: TOTAL: \$45,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bernard, P. S.	LARC/Bushnell, D. M.	41-Aero Engr
	LARC/Anyiwo, J.	

**NAG 1-364 University of Maryland - College Park 2859**  
 Aerosol chemistry during the NASA global troposphere experiment aircraft sampling experiments

Period	Obligations	
06/08/83-06/07/84	FY83: \$27,000 TOTAL: \$27,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Zoller, W. H.	LARC/Harriss, R. C.	31-Atmos Sci
	LARC/Mugler, J. P.	

**NAG 1-375 University of Maryland - College Park 2860**  
 Gust response of articulated and hingeless rotors in hover and forward flight

Period	Obligations	
06/01/83-05/31/84	FY83: \$47,912 TOTAL: \$47,912	
Prin. Invest.	NASA Tech. Officer	CASE Category
Chopra, I.	LARC/Mantay, W. R.	41-Aero Engr

**NAG 2-28 University of Maryland - College Park 2861**  
 Volcanic impact on stratospheric aerosol chemistry

Period	Obligations	
03/01/80-12/31/82	FY83: TOTAL: \$106,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Zoller, W. H.	ARC/Margozzi, A. P.	31-Atmos Sci

**NAG 3-192 University of Maryland - College Park 2862**  
 Characterization studies of deposits formed from thermally stressed jet fuels

Period	Obligations	
09/01/81-08/30/84	FY83: TOTAL: \$175,611	
Prin. Invest.	NASA Tech. Officer	CASE Category
Adler, I.	LERC/Seng, G. T.	12-Chemistry

**NAG 3-470 University of Maryland - College Park 2863**  
 Light scattering tests of fundamental theories of transport properties in the critical region

Period	Obligations	
09/05/83-09/04/84	FY83: \$83,000 TOTAL: \$83,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Gammon, R. W.	LERC/Chai, A. T.	31-Atmos Sci

**NAG 5-9 University of Maryland - College Park 2864**  
 Research relative to the development of hydrologic models for remote sensing technology

Period	Obligations	
02/01/80-06/30/84	FY83: \$239,526 TOTAL: \$676,542	
Prin. Invest.	NASA Tech. Officer	CASE Category
Ragan, R. M.	GSFC/Rango, A.	44-Civil Engr
	GSFC/Salomonsen, V. V.	

**NAG 5-26 University of Maryland - College Park 2865**  
 Research of sea-air-land interaction in climate modeling

Period	Obligations	
03/01/80-05/31/83	FY83: TOTAL: \$289,674	
Prin. Invest.	NASA Tech. Officer	CASE Category
Baer, F.	GSFC/Halem, M.	31-Atmos Sci

**NAG 5-54 University of Maryland - College Park 2866**  
 Studies of Seyfert and X-ray galaxies

Period	Obligations	
05/01/80-04/30/83	FY83: TOTAL: \$21,100	
Prin. Invest.	NASA Tech. Officer	CASE Category
Wilson, A. S.	GSFC/Boggess, A.	11-Astronomy

**NAG 5-90 University of Maryland - College Park 2867**  
 Research relative to laser and star tracking on GSFC telescopes

Period	Obligations	
07/15/80-06/30/82	FY83: TOTAL: \$22,930	
Prin. Invest.	NASA Tech. Officer	CASE Category
Currie, D. G.	GSFC/Friskey, J. L.	31-Atmos Sci

**NAG 5-99 University of Maryland - College Park 2868**  
 Improving communications between humans and computer-directed automatic systems

Period	Obligations	
09/01/80-06/30/83	FY83: TOTAL: \$96,802	
Prin. Invest.	NASA Tech. Officer	CASE Category
Rieger, C. J.	GSFC/Wallgren, K.22-Computer Science	

**NAG 5-133 University of Maryland - College Park 2869**  
 Research relative to severe convective storm diagnostics

Period	Obligations	
01/01/81-12/31/81	FY83: TOTAL: \$29,877	
Prin. Invest.	NASA Tech. Officer	CASE Category
Pitter, R. L.	GSFC/Uccellini, L. W.	39-Env Sci, NEC

**NAG 5-135 University of Maryland - College Park 2870**  
 Energetic particle acceleration in solar flares

Period	Obligations	
01/01/81-03/31/84	FY83: \$75,000 TOTAL: \$200,840	
Prin. Invest.	NASA Tech. Officer	CASE Category
Chang, C. C.	GSFC/Jones, F. C.	13-Physics
Holmgren, H. D.		

**NAG 5-154 University of Maryland - College Park 2871**  
 Research relative to automated multisensor image registration

Period	Obligations	
04/01/81-03/31/82	FY83: TOTAL: \$20,750	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kanal, L. N.	GSFC/Ramapriyan, H. K.	31-Atmos Sci

**NAG 5-169 University of Maryland - College Park 2872**  
 Measurement of interstellar helium impinging on the Earth

Period	Obligations	
04/15/81-10/31/83	FY83: TOTAL: \$18,873	
Prin. Invest.	NASA Tech. Officer	CASE Category
Moore, J.	GSFC/Early, L. J.	13-Physics
Opal, C. B.		
Meir, R. R.		

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**NAG 5-203 University of Maryland - College Park 2873**  
 Satellite sensing of air pollution and ground signatures

Period	Obligations	
09/01/81-08/31/84	FY83: \$73,227	TOTAL: \$185,919
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pinker, R. T.	GSFC/Fraser, R. S.	31-Atmos Sci
Kaufman, Y. J.	GSFC/Murphy, R. E.	

**NAG 5-245 University of Maryland - College Park 2880**  
 Planetary studies through interpretation of satellite data

Period	Obligations	
06/15/82-11/30/83	FY83: \$94,837	TOTAL: \$161,837
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Trasco, J. D.	GSFC/Frey, H. V.	32-Geological Sci
Kindu, M. R.		

**NAG 5-215 University of Maryland - College Park 2874**  
 Dynamics of planetary waves and seasonal climate variations

Period	Obligations	
11/15/81-06/14/84	FY83: \$64,950	TOTAL: \$147,036
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rodenhuis, D. R.	GSFC/Halem, M.	31-Atmos Sci

**NAG 5-247 University of Maryland - College Park 2881**  
 A study of the planetary nebula

Period	Obligations	
07/15/82-07/14/83	FY83:	TOTAL: \$3,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Harrington, J. P.	GSFC/Kondo, Y.	11-Astronomy
Feibelman, W. A.		

**NAG 5-216 University of Maryland - College Park 2875**  
 Thermodynamic and spectroscopic studies relevant to a Jovian satellite

Period	Obligations	
01/15/82-02/14/85	FY83: \$49,848	TOTAL: \$79,992
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Khanna, R. K.	GSFC/Pearl, J. C.	11-Astronomy

**NAG 5-252 University of Maryland - College Park 2882**  
 Satellite observations of distant dusty comets

Period	Obligations	
07/01/82-07/31/84	FY83: \$10,500	TOTAL: \$15,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
A'hearn, M. F.	GSFC/Kondo, Y.	11-Astronomy
Millis, R. L.		
Schleicher, D. G.		

**NAG 5-222 University of Maryland - College Park 2876**  
 High resolution spectroscopy of the oxygen molecule

Period	Obligations	
03/01/82-03/31/84	FY83: \$15,000	TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilkerson, T. D.	GSFC/Gentry, B. M.	12-Chemistry
	GSFC/Strow, L. L.	

**NAG 5-263 University of Maryland - College Park 2883**  
 Investigation of radio frequency high waveguide laser

Period	Obligations	
08/01/82-09/30/84	FY83: \$50,690	TOTAL: \$95,690
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hochuli, U. E.	GSFC/Degnan, J. J.	49-Engr, NEC

**NAG 5-223 University of Maryland - College Park 2877**  
 A stochastic snowmelt model for probabilistic decision-making

Period	Obligations	
03/01/82-07/31/83	FY83:	TOTAL: \$29,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nccuen, R. A.	GSFC/Owe, M.	45-Elec Engr
	GSFC/Foster, J. L.	

**NAG 5-279 University of Maryland - College Park 2884**  
 Research of comets as targets of opportunity

Period	Obligations	
10/01/82-09/30/83	FY83:	TOTAL: \$2,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
A'hearn, M. F.	GSFC/Kondo, Y.	11-Astronomy
Millis, R. L.		

**NAG 5-235 University of Maryland - College Park 2878**  
 Research relative to a uniform access to distributed heterogeneous databases

Period	Obligations	
06/01/82-08/31/84	FY83: \$67,600	TOTAL: \$129,138
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jacobs, B. E.	GSFC/Smith, P. H.	22-Computer Science
	GSFC/Berbert, J. H.	

**NAG 5-290 University of Maryland - College Park 2885**  
 Problem-solving operations on spatial representations

Period	Obligations	
01/15/83-01/14/84	FY83: \$18,997	TOTAL: \$18,997
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Reggia, J. R.	GSFC/Paddack, S. J.	29-Math/Computer, NEC

**NAG 5-244 University of Maryland - College Park 2879**  
 Studies of non-fragmentary ionization processes for the mass spectrometry of comets

Period	Obligations	
06/15/82-12/31/83	FY83:	TOTAL: \$27,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Coplan, M. A.	GSFC/Ogilvie, K. W.	13-Physics

**NAG 5-292 University of Maryland - College Park 2886**  
 Structure fidelity of satellite temperature soundings

Period	Obligations	
01/15/83-01/14/84	FY83: \$70,000	TOTAL: \$70,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thompson, O. E.	GSFC/Halem, M.	31-Atmos Sci

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**NAG 5-309 University of Maryland - College Park 2887**  
Improvement of the radiative routines in the GLAS general circulation model (Goddard Laboratory for Atmospheric Sciences)

Period	Obligations	
03/15/83-03/14/84	FY83: \$82,682	TOTAL: \$82,682
Prin. Invest.	NASA Tech. Officer	CASE Category
Baer, F.	GSFC/Thiele, O. W.	31-Atmos Sci
Harshvardan		

**NAG 5-323 University of Maryland - College Park 2888**  
Research relative to laser wavemeter-spectrometer techniques

Period	Obligations	
05/15/83-11/14/83	FY83: \$24,000	TOTAL: \$24,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wilkerson, T. D.	GSFC/Dombrowski, M.	49-Engr, NEC
	GSFC/Schwemmer, G. K.	

**NAG 5-368 University of Maryland - College Park 2889**  
Research in requirements and software design

Period	Obligations	
09/01/83-08/31/84	FY83: \$99,567	TOTAL: \$99,567
Prin. Invest.	NASA Tech. Officer	CASE Category
Basili, V. R.	GSFC/McGarry, F. E.	
Zelkowitz, M. K.	22-Computer Science	
	GSFC/Tasaki, K. K.	

**NAG 8-15 University of Maryland - College Park 2890**  
Properties of large nearly perfect crystals at very low temperatures

Period	Obligations	
07/23/82-08/03/83	FY83:	TOTAL: \$41,989
Prin. Invest.	NASA Tech. Officer	CASE Category
Weber, J.	MSFC/Decher, R.	13-Physics
	MSFC/Sisk, C.	

**NAG 8-329 University of Maryland - College Park 2891**  
X-ray study of elliptical and SO galaxies with compact nuclear radio

Period	Obligations	
03/01/80-02/28/82	FY83:	TOTAL: \$11,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Wilson, A. S.	MSFC/Jones, J. B.	11-Astronomy

**NAG 8-349 University of Maryland - College Park 2892**  
Studies of Crab nebula-like supernova remnants

Period	Obligations	
06/20/80-06/30/82	FY83:	TOTAL: \$8,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wilson, A. S.	MSFC/Swearingen, J. C.	11-Astronomy
Kundu, M. R.		

**NAG 8-429 University of Maryland - College Park 2893**  
X-ray study of Seyfert galaxies with extended forbidden line regions

Period	Obligations	
01/01/82-12/31/83	FY83:	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wilson, A. S.	MSFC/Stone, J. F.	11-Astronomy
Ulvestad, J. S.		

**NAGW 33 University of Maryland - College Park 2894**  
A program to develop remote sensing excellence

Period	Obligations	
03/01/80-02/28/85	FY83: \$100,000	TOTAL: \$500,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ragan, R. M.	HQ-ET/Tuyahov, A. J.	39-Env Sci, NEC

**NAGW 81 University of Maryland - College Park 2895**  
A study of discontinuities and radiation processes in solar terrestrial plasmas

Period	Obligations	
06/01/80-05/31/84	FY83: \$260,000	TOTAL: \$1,125,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Papadopoulos, K.	HQ-EE/Butler, D. M.	39-Env Sci, NEC
Wu, C. S.		

**NAGW 101 University of Maryland - College Park 2896**  
Thermal and suprathermal ion composition studies close to the Sun

Period	Obligations	
10/01/80-01/31/84	FY83: \$70,000	TOTAL: \$340,670
Prin. Invest.	NASA Tech. Officer	CASE Category
Gloeckler, G.	HQ-EZ/Chipman, E. G.	13-Physics

**NAGW 219 University of Maryland - College Park 2897**  
Workshop on carbohydrate synthesis

Period	Obligations	
06/15/81-06/14/82	FY83:	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ponnamperuma, C.	HQ-EB/Bredt, J. H.	12-Chemistry
	HQ-EB/Devincenzi, D. L.	

**NAGW 226 University of Maryland - College Park 2898**  
The Voyager mission: Implications for planetary biology

Period	Obligations	
06/26/81-06/25/82	FY83:	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ponnamperuma, C.	HQ-EB/Devincenzi, D. L.	12-Chemistry

**NAGW 293 University of Maryland - College Park 2899**  
Galapagos hydrothermal vent ecologies: Possibilities for neogeo-genesis

Period	Obligations	
01/01/82-12/31/82	FY83:	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ponnamperuma, C.	HQ-EB/Geib, D. S.	12-Chemistry
	HQ-EB/Devincenzi, D. L.	

**NAGW 387 University of Maryland - College Park 2900**  
Novel algorithm for sea surface height estimation using complex SAR data

Period	Obligations	
07/01/82-06/30/83	FY83: \$59,857	TOTAL: \$59,857
Prin. Invest.	NASA Tech. Officer	CASE Category
Harger, R. O.	HQ-EE/McGoldrick, L. F.	
	HQ-EE/Wilson, W. S.	33-Oceanography

**NASA'S UNIVERSITY PROGRAM  
MARYLAND (Continued)**

**NAGW 415 University of Maryland - College Park 2901**  
Solar Maximum Mission workshop

Period	Obligations
02/01/83-01/31/84	FY83: \$107,000 TOTAL: \$107,000
Prin. Invest.	NASA Tech. Officer CASE Category
Kundu, M.	HQ-EZ/Chipman, E. 13-Physics

**NAGW 483 University of Maryland - College Park 2902**  
Unstable current system and plasma instabilities in astrophysics

Period	Obligations
07/01/83-06/30/84	FY83: \$10,000 TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer CASE Category
Kundu, M.	HQ-EZ/Chipman, E. 13-Physics

**NAS 5-20062 University of Maryland - College Park 2903**  
Low energy charged particles experiment for international Sun-Earth Explorer mother and heliocentric spacecraft

Period	Obligations
05/02/74-11/30/81	FY83: TOTAL: \$1,221,861
Prin. Invest.	NASA Tech. Officer CASE Category
Gloeckler, G.	GSFC/Corrigan, J. P. 13-Physics

**NAS 5-25472 University of Maryland - College Park 2904**  
International Sun-Earth Explorer 3 data interpretation services

Period	Obligations
01/29/79-03/31/84	FY83: TOTAL: \$182,513
Prin. Invest.	NASA Tech. Officer CASE Category
Coplan, M. A.	GSFC/Ogilvie, K. W. 11-Astronomy

**NAS 5-25486 University of Maryland - College Park 2905**  
Support to the space telescope wide field planetary camera development team

Period	Obligations
02/01/79-12/31/83	FY83: TOTAL: \$129,047
Prin. Invest.	NASA Tech. Officer CASE Category
Currie, D. S.	GSFC/Fellerman, K. 31-Atmos Sci

**NAS 5-25735 University of Maryland - College Park 2906**  
Interplanetary monitoring of platform-H and J spacecraft ion and electron experiment

Period	Obligations
11/01/79-09/30/84	FY83: \$82,536 TOTAL: \$310,000
Prin. Invest.	NASA Tech. Officer CASE Category
Gloeckler, G.	GSFC/Wales, R. O. 11-Astronomy

**NAS 5-25764 University of Maryland - College Park 2907**  
Perform research in natural human to machine interfaces for NASA mission operations data systems

Period	Obligations
06/29/79-06/05/84	FY83: \$109,954 TOTAL: \$296,529
Prin. Invest.	NASA Tech. Officer CASE Category
Rieger, C. S.	GSFC/Truskowski, W. 99-Multi-Discip
Somet, H.	

**NAS 5-26098 University of Maryland - College Park 2908**  
Definition phase for transition radiation and ionization calorimeter (TRIC) telescope

Period	Obligations
03/04/80-09/30/83	FY83: TOTAL: \$55,170
Prin. Invest.	NASA Tech. Officer CASE Category
Yodh, G. B.	GSFC/Ormes, J. F. 11-Astronomy

**NAS 5-26463 University of Maryland - College Park 2909**  
Provide scientific personnel for participation in the cooperative visitor program

Period	Obligations
02/01/81-01/31/82	FY83: TOTAL: \$229,549
Prin. Invest.	NASA Tech. Officer CASE Category
Gal-chen, T.	GSFC/Neil, E. A. 31-Atmos Sci
	GSFC/Kreins, E. R.

**NAS 5-26582 University of Maryland - College Park 2910**  
Study of energetic particle acceleration

Period	Obligations
05/08/81-11/30/84	FY83: \$15,000 TOTAL: \$39,762
Prin. Invest.	NASA Tech. Officer CASE Category
Eicbler, D. S.	GSFC/Ramaty, R. 13-Physics

**NAS 5-26639 University of Maryland - College Park 2911**  
Maintain instructional television (ITV) system and provide for courses to be broadcast via the ITV

Period	Obligations
08/16/81-12/31/83	FY83: \$80 TOTAL: \$560
Prin. Invest.	NASA Tech. Officer CASE Category
Seigal, A. E.	GSFC/Baker, R. F. 29-Math/Computer, NEC

**NAS 5-26649 University of Maryland - College Park 2912**  
Study of interconnectivity of computers

Period	Obligations
07/22/81-07/22/82	FY83: TOTAL: \$29,231
Prin. Invest.	NASA Tech. Officer CASE Category
Agrawala, A. K.	GSFC/Dalton, J. T. 22-Computer Science
	GSFC/Howell, D. R.

**NAS 5-26650 University of Maryland - College Park 2913**  
Development of university training modules and demonstration projects for joint NASA/Corps of Engineers remote sensing projects

Period	Obligations
07/17/81-07/16/82	FY83: TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ragan, R. M.	GSFC/Gervin, J. C. 39-Env Sci, NEC

**NAS 5-26654 University of Maryland - College Park 2914**  
Laser spectrometer

Period	Obligations
07/15/81-07/15/82	FY83: TOTAL: \$39,176
Prin. Invest.	NASA Tech. Officer CASE Category
Wilkerson, T. D.	GSFC/Dombrowski, M. 13-Physics
	GSFC/Schwemmer, G. K.

**NAS 5-26739 University of Maryland - College Park 2915**  
Nuclear and tonic charge distribution experiment

Period	Obligations
10/01/81-11/30/84	FY83: \$145,330 TOTAL: \$300,360
Prin. Invest.	NASA Tech. Officer CASE Category
Gloeckler, G.	GSFC/Wales, R. O. 11-Astronomy

# **NASA'S UNIVERSITY PROGRAM** **MARYLAND (Continued)**

**NAS 5-26810 University of Maryland - College Park 2916**  
Self-documenting data structure study

Period	Obligations
11/24/81-07/26/83	FY83: \$14,000 TOTAL: \$42,665
Prin. Invest.	NASA Tech. Officer CASE Category
Roussopoulos, N.	GSFC/Truskowski, W. F. 49-Engr, NEC

**NAS 5-26856 University of Maryland - College Park 2917**  
Definition studies for the solar wind and superthermal ion composition studies

Period	Obligations
05/03/82-09/15/84	FY83: \$67,360 TOTAL: \$105,360
Prin. Invest.	NASA Tech. Officer CASE Category
Gloeckler, G.	GSFC/O'brien, J. J. 13-Physics

**NAS 5-26870 University of Maryland - College Park 2918**  
Modeling and theoretical studies in support of origin of plasmas in the Earth's neighborhood (OPEN)

Period	Obligations
04/23/82-09/15/84	FY83: \$23,000 TOTAL: \$52,000
Prin. Invest.	NASA Tech. Officer CASE Category
Papadopoulos, K.	GSFC/O'brien, J. J. 13-Physics

**NAS 5-26883 University of Maryland - College Park 2919**  
Scientific research seminars relative to space applications

Period	Obligations
02/01/82-03/15/83	FY83: TOTAL: \$250,035
Prin. Invest.	NASA Tech. Officer CASE Category
Baer, F.	GSFC/Neil, E. A. 31-Atmos Sci
	GSFC/Kreins, E. R.

**NAS 5-27378 University of Maryland - College Park 2920**  
A research program in software engineering and systems

Period	Obligations
09/01/82-12/15/83	FY83: TOTAL: \$210,000
Prin. Invest.	NASA Tech. Officer CASE Category
Yeh, R. T.	GSFC/Truskowski, W. F.
Gligor, V. D.	22-Computer Science
	GSFC/McGarry, F. E.

**NAS 5-27612 University of Maryland - College Park 2921**  
Provide scientific personnel for participation in the cooperative visitor program

Period	Obligations
03/15/83-03/14/84	FY83: \$183,149 TOTAL: \$183,149
Prin. Invest.	NASA Tech. Officer CASE Category
Baer, F.	GSFC/Neil, E. A. 31-Atmos Sci
	GSFC/Kreins, E. R.

**NAS 5-27657 University of Maryland - College Park 2922**  
Procedural development for analysis and purification of NRL-fluoropolyol

Period	Obligations
04/13/83-04/11/84	FY83: \$11,813 TOTAL: \$11,813
Prin. Invest.	NASA Tech. Officer CASE Category
Freeman, D. H.	GSFC/Lee, S. Y. 12-Chemistry

**NAS 5-27704 University of Maryland - College Park 2923**  
Study and development of a distributed systems approach for sensor data analysis

Period	Obligations
06/14/83-06/13/84	FY83: \$74,000 TOTAL: \$74,000
Prin. Invest.	NASA Tech. Officer CASE Category
Agrawala, A.	GSFC/Howell, D. 31-Atmos Sci
Tripathi, S. K.	

**NAS 5-27724 University of Maryland - College Park 2924**  
Development of prototype self-document/describing system

Period	Obligations
07/12/83-07/12/84	FY83: \$75,259 TOTAL: \$75,259
Prin. Invest.	NASA Tech. Officer CASE Category
Roussopoulos, N.	GSFC/Truskowski, W. F. 49-Engr, NEC

**NAS 8-33798 University of Maryland - College Park 2925**  
Design studies for the shuttle time and frequency transfer experiment

Period	Obligations
09/12/80-12/31/83	FY83: TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer CASE Category
Alley, C. O.	MSFC/Decher, R. 31-Atmos Sci
	MSFC/Duncan, B. J.

**NAS 8-33822 University of Maryland - College Park 2926**  
Development of a superconducting gravity gradiometer

Period	Obligations
07/23/80-07/22/85	FY83: \$181,000 TOTAL: \$629,000
Prin. Invest.	NASA Tech. Officer CASE Category
Paik, H. J.	MSFC/Urban, E. W. 31-Atmos Sci
Richard, J. P.	MSFC/Shriver, E. L.

**NAS 9-16434 University of Maryland - College Park 2927**  
Development of an expert system for crop labeling and classification

Period	Obligations
09/01/81-02/28/83	FY83: TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer CASE Category
Davis, L. S.	JSC/Browne, I. D. 39-Env Sci, NEC

**NASW 3726 University of Maryland - College Park 2928**  
Workshop on solar terrestrial physics

Period	Obligations
03/01/83-02/28/84	FY83: \$109,174 TOTAL: \$109,174
Prin. Invest.	NASA Tech. Officer CASE Category
Papadopoulos, K.	HQ-EE/Butler, D. 13-Physics

**NCA 2-420201 University of Maryland - College Park 2929**  
On the characterization of the phase from halobacterium saccharovorum

Period	Obligations
01/01/82-12/31/83	FY83: \$22,260 TOTAL: \$37,260
Prin. Invest.	NASA Tech. Officer CASE Category
Ponnamperuma, C.	ARC/Hochstein, L. I. 12-Chemistry

**NASA'S UNIVERSITY PROGRAM  
MARYLAND (Continued)**

<b>NCA 5-28 University of Maryland - College Park 2930</b>			
Goddard introduction to engineering careers			
<i>Period</i>	<i>Obligations</i>		
06/01/78-07/16/84	FY83: TOTAL: \$37,065		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Newton, J. W.	GSFC/Chapman, J. W.	49-Engr, NEC	
	GSFC/Mundy, J. R.		
<b>NGR 21-002-006 University of Maryland - College Park 2937</b>			
Systematic in-flight photography and subsequent recovery of satellites			
<i>Period</i>	<i>Obligations</i>		
06/27/62-07/31/84	FY83: TOTAL: \$325,448		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wilkerson, T. D.	HQ-EZ/Opp, A. G.	13-Physics	
<b>NCC 1-25 University of Maryland - College Park 2931</b>			
Airborne water vapor lidar experiment			
<i>Period</i>	<i>Obligations</i>		
08/01/79-04/30/83	FY83: TOTAL: \$143,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wilkerson, T. D.	LARC/Browell, E. V.	31-Atmos Sci	
	LARC/Carter, A. F.		
<b>NCC 1-41 University of Maryland - College Park 2932</b>			
Selected applications of computational aerodynamics			
<i>Period</i>	<i>Obligations</i>		
05/01/80-06/30/84	FY83: \$90,000 TOTAL: \$451,415		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Anderson, J. D.	LARC/Drummond, J. P.	41-Aero Engr	
Plotkin, A.	LARC/Dwoyer, D. L.		
<b>NCC 2-208 University of Maryland - College Park 2933</b>			
Support of shuttle environment workshop			
<i>Period</i>	<i>Obligations</i>		
08/15/82-01/31/83	FY83: \$7,950 TOTAL: \$15,900		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wilkerson, T. D.	ARC/Witteborn, F. C.	11-Astronomy	
<b>NCC 5-26 University of Maryland - College Park 2934</b>			
Analysis of terrestrial conditions and dynamics			
<i>Period</i>	<i>Obligations</i>		
12/01/82-11/30/83	FY83: \$100,000 TOTAL: \$100,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Goward, S. N.	GSFC/Ungar, S. G.	32-Geological Sci	
	GSFC/Barker, J.		
<b>NGL 21-002-005 University of Maryland - College Park 2935</b>			
Theoretical research on dynamics of astrophysical plasmas including studies of structure of plasma shock waves in solar corona and their possible radio emission			
<i>Period</i>	<i>Obligations</i>		
02/01/62-11/30/83	FY83: \$100,000 TOTAL: \$1,367,493		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wu, C. S.	HQ-EE/Lynch, J. T.	19-Phys Sci, NEC	
	HQ-EE/Schmerling, E. R.		
<b>NGR 21-002-073 University of Maryland - College Park 2939</b>			
Experimental and theoretical investigation of plasma radiation			
<i>Period</i>	<i>Obligations</i>		
04/26/66-02/29/84	FY83: \$30,000 TOTAL: \$1,120,173		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Griem, H. R.	HQ-EZ/Stencel, R. E.	11-Astronomy	
	HQ-EZ/Weiler, E. J.		
<b>NGR 21-002-096 University of Maryland - College Park 2940</b>			
Research in atmospheric physics			
<i>Period</i>	<i>Obligations</i>		
06/21/66-03/31/84	FY83: \$141,015 TOTAL: \$1,215,201		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Matthews, D. L.	GSFC/Hartle, R. E.	31-Atmos Sci	
Austing, R.	GSFC/Hoegy, W. R.		
<b>NGR 21-002-199 University of Maryland - College Park 2941</b>			
Research in solar radio astronomy at short wavelengths			
<i>Period</i>	<i>Obligations</i>		
04/11/69-10/31/83	FY83: \$54,000 TOTAL: \$661,656		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Kundu, M. R.	HQ-EZ/Chipman, E. G.	13-Physics	
<b>NGR 21-002-224 University of Maryland - College Park 2942</b>			
Research on the measurement of the charge and isotopic composition on the primary cosmic rays			
<i>Period</i>	<i>Obligations</i>		
07/31/69-11/30/83	FY83: \$50,000 TOTAL: \$526,300		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gloeckler, G.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy	
	HQ-EZ/Opp, A. G.		
<b>NGR 21-002-291 University of Maryland - College Park 2943</b>			
Studies of charged particles in natural and laboratory environments			
<i>Period</i>	<i>Obligations</i>		
01/28/71-01/15/84	FY83: \$31,859 TOTAL: \$502,898		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Coplan, M. A.	GSFC/Hoffman, R. A.	13-Physics	
Moore, J. H.	GSFC/Heppner, J. P.		
<b>NGL 21-002-033 University of Maryland - College Park 2936</b>			
Theoretical and experimental studies in space sciences, including consideration of rocket probe and satellites techniques			
<i>Period</i>	<i>Obligations</i>		
06/02/64-12/31/84	FY83: \$208,500 TOTAL: \$3,774,794		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Trasco, J. D.	GSFC/Donn, B.	31-Atmos Sci	
Kunde, M. R.			

# **NASA'S UNIVERSITY PROGRAM** **MARYLAND (Continued)**

**NGR 21-002-316 University of Maryland - College Park 2944**  
Research program in charged particle detector technology

Period	Obligations
07/01/71-04/30/84	FY83: \$697,000 TOTAL: \$5,196,570
Prin. Invest.	NASA Tech. Officer CASE Category
Matthews, D. L.	GSFC/Hartle, R. E. 19-Phys Sci, NEC
Ipavich, F. M.	GSFC/Hoegy, W. R.
Mason, G. M.	

**NGR 21-002-317 University of Maryland - College Park 2945**  
Chemical studies of the origin of life

Period	Obligations
08/18/71-01/31/84	FY83: \$176,050 TOTAL: \$1,323,900
Prin. Invest.	NASA Tech. Officer CASE Category
Ponnamperuma, C. A.	HQ-EB/Devincenzi, D. L. 12-Chemistry
	HQ-EB/Rambler, M.

**NGT 21-002-254 University of Maryland - College Park 2946**  
Summer faculty fellowship program in research for 24 faculty members

Period	Obligations
12/23/69-03/31/84	FY83: \$229,165 TOTAL: \$1,220,203
Prin. Invest.	NASA Tech. Officer CASE Category
Emad, F. P.	HQ-LB/Owens, F. C. 49-Engr, NEC

**NGT 21-002-800 University of Maryland - College Park 2947**  
Estimation of watershed hydraulic length using remote sensing

Period	Obligations
09/01/80-08/31/82	FY83: TOTAL: \$16,100
Prin. Invest.	NASA Tech. Officer CASE Category
McCuen, R. H.	HQ-LB/Carter, C. H. 44-Civil Engr

**NGT 21-002-801 University of Maryland - College Park 2948**  
Graduate student researchers program

Period	Obligations
09/01/80-08/31/82	FY83: TOTAL: \$14,250
Prin. Invest.	NASA Tech. Officer CASE Category
Rose, W.	HQ-LB/Carter, C. H. 11-Astronomy

**NGT 21-002-802 University of Maryland - College Park 2949**  
Graduate student researchers program

Period	Obligations
09/01/80-02/28/83	FY83: TOTAL: \$20,525
Prin. Invest.	NASA Tech. Officer CASE Category
Wentzel, D. G.	HQ-LB/Carter, C. H. 11-Astronomy

**NGT 21-002-803 University of Maryland - College Park 2950**  
Graduate student researchers program

Period	Obligations
09/01/80-08/31/83	FY83: TOTAL: \$24,850
Prin. Invest.	NASA Tech. Officer CASE Category
Gloeckler, G.	HQ-LB/Carter, C. H. 13-Physics

**NGT 21-002-804 University of Maryland - College Park 2951**  
Graduate student researchers program

Period	Obligations
09/01/80-08/31/83	FY83: TOTAL: \$23,950
Prin. Invest.	NASA Tech. Officer CASE Category
Gloeckler, G.	HQ-LB/Carter, C. H. 11-Astronomy

**NGT 21-002-805 University of Maryland - College Park 2952**  
Summer faculty fellowship program

Period	Obligations
01/01/81-09/30/82	FY83: TOTAL: \$268,414
Prin. Invest.	NASA Tech. Officer CASE Category
Yeh, R. T.	HQ-LB/Carter, C. H. 19-Phys Sci, NEC

**NGT 21-002-806 University of Maryland - College Park 2953**  
Graduate student researchers program

Period	Obligations
06/01/81-05/31/83	FY83: TOTAL: \$20,466
Prin. Invest.	NASA Tech. Officer CASE Category
Sucher, J.	HQ-LB/Carter, C. H. 11-Astronomy

**NGT 21-002-807 University of Maryland - College Park 2954**  
Graduate student researchers program

Period	Obligations
06/01/81-05/31/84	FY83: \$11,800 TOTAL: \$31,800
Prin. Invest.	NASA Tech. Officer CASE Category
Adler, I.	HQ-LB/Owens, F. C. 12-Chemistry

**NGT 21-002-808 University of Maryland - College Park 2955**  
Graduate student researchers program

Period	Obligations
06/01/81-05/31/84	FY83: \$11,700 TOTAL: \$32,720
Prin. Invest.	NASA Tech. Officer CASE Category
Wilson, A. S.	HQ-LB/Owens, F. C. 11-Astronomy

**NGT 21-002-809 University of Maryland - College Park 2956**  
Graduate student researchers program

Period	Obligations
05/01/81-04/30/83	FY83: TOTAL: \$21,000
Prin. Invest.	NASA Tech. Officer CASE Category
Rodenhuis, D. R.	HQ-LB/Carter, C. H. 39-Env Sci, NEC

**NGT 21-002-810 University of Maryland - College Park 2957**  
Graduate student researchers program

Period	Obligations
04/01/81-03/31/84	FY83: \$12,375 TOTAL: \$32,175
Prin. Invest.	NASA Tech. Officer CASE Category
Horwitz, J. L.	HQ-LB/Owens, F. C. 13-Physics

**NGT 21-002-811 University of Maryland - College Park 2958**  
Graduate student researchers program

Period	Obligations
04/01/82-03/31/84	FY83: \$10,350 TOTAL: \$18,700
Prin. Invest.	NASA Tech. Officer CASE Category
Amaty, R. R.	HQ-LB/Owens, F. C. 11-Astronomy

**NGT 21-002-812 University of Maryland - College Park 2959**  
Graduate student researchers program

Period	Obligations
04/01/82-03/31/84	FY83: \$10,700 TOTAL: \$19,250
Prin. Invest.	NASA Tech. Officer CASE Category
Gloeckler, G.	HQ-LB/Owens, F. C. 11-Astronomy



**NASA'S UNIVERSITY PROGRAM  
MARYLAND (Continued)**

**NGT 21-002-813 University of Maryland - College Park 2960**  
Graduate student researchers program

Period	Obligations	
04/01/82-03/31/84	FY83: \$10,600	TOTAL: \$19,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Wentzel, D. G.	HQ-LB/Owens, F. C.	13-Physics

**NGT 21-002-814 University of Maryland - College Park 2961**  
Graduate student researchers program

Period	Obligations	
06/01/82-05/31/84	FY83: \$12,018	TOTAL: \$21,218
Prin. Invest.	NASA Tech. Officer	CASE Category
Adler, I.	HQ-LB/Owens, F. C.	13-Physics

**NGT 21-002-815 University of Maryland - College Park 2962**  
Graduate student researchers program

Period	Obligations	
08/20/82-07/18/84	FY83: \$11,482	TOTAL: \$21,432
Prin. Invest.	NASA Tech. Officer	CASE Category
Jones, E.	HQ-LB/Owens, F. C.	42-Astro Engr

**NGT 21-002-816 University of Maryland - College Park 2963**  
Graduate student researchers program

Period	Obligations	
05/18/82-05/17/84	FY83: \$12,000	TOTAL: \$22,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Park, R. L.	HQ-LB/Owens, F. C.	13-Physics

**NGT 21-002-817 University of Maryland - College Park 2964**  
NASA graduate student researchers program

Period	Obligations	
05/01/83-04/30/84	FY83: \$11,000	TOTAL: \$11,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Matthews, T. A.	HQ-LB/Owens, F. C.	11-Astronomy

**NSG 1468 University of Maryland - College Park 2965**  
Study of surface acoustic wave charge transfer device

Period	Obligations	
11/15/77-12/31/81	FY83:	TOTAL: \$102,669
Prin. Invest.	NASA Tech. Officer	CASE Category
Lin, H. C.	LARC/Benz, H. F.	45-Elec Engr
	LARC/Husson, C.	

**NSG 1570 University of Maryland - College Park 2966**  
General aviation aerodynamics and dynamics

Period	Obligations	
11/01/78-10/31/83	FY83: \$50,895	TOTAL: \$325,194
Prin. Invest.	NASA Tech. Officer	CASE Category
Winkelmann, A. E.	LARC/Dicarlo, D. J.	41-Aero Engr
Anderson, J. D.	LARC/Johnson, J. L., Jr.	
Barlow, J. B.		

**NSG 2378 University of Maryland - College Park 2967**  
Production of monoclonal antibodies to human T-cells

Period	Obligations	
04/01/79-06/30/82	FY83:	TOTAL: \$133,349
Prin. Invest.	NASA Tech. Officer	CASE Category
Goldsby, R. A.	ARC/Mandel, A. D.	56-Medical Sciences

**NSG 5123 University of Maryland - College Park 2968**  
Evaluation of software engineering disciplines

Period	Obligations	
08/01/76-04/30/84	FY83: \$117,769	TOTAL: \$530,209
Prin. Invest.	NASA Tech. Officer	CASE Category
Basili, V. R.	GSFC/McGarry, F. E.	22-Computer Science

**NSG 5172 University of Maryland - College Park 2969**  
Raman spectroscopy of cosmic ices and planetary atmospheres

Period	Obligations	
04/01/77-11/30/83	FY83: \$21,052	TOTAL: \$116,234
Prin. Invest.	NASA Tech. Officer	CASE Category
Khanna, R. K.	GSFC/Donn, B. D.	12-Chemistry

**NSG 5209 University of Maryland - College Park 2970**  
Multidisciplinary research program in atmospheric science

Period	Obligations	
09/12/77-03/31/82	FY83:	TOTAL: \$1,050,197
Prin. Invest.	NASA Tech. Officer	CASE Category
Thompson, O. E.	GSFC/Neil, E. A.	31-Atmos Sci

**NSG 5313 University of Maryland - College Park 2971**  
Resonance fluorescence in atmospheric gases research

Period	Obligations	
12/01/78-05/15/84	FY83: \$105,000	TOTAL: \$544,000
Prin. Invest.	NASA Tech. Officer	CASE Category
McIlrath, T. J.	GSFC/Heaps, W. S.	13-Physics
	GSFC/McGee, T. J.	

**NSG 5320 University of Maryland - College Park 2972**  
Ground based solar radio observations Solar Maximum Mission

Period	Obligations	
01/15/79-02/28/83	FY83:	TOTAL: \$196,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Kundu, M. R.	GSFC/Bullock, G.	31-Atmos Sci

**NSG 5408 University of Maryland - College Park 2973**  
Study of bow shock ions, particle accelerations and plasma instabilities

Period	Obligations	
10/01/79-09/30/82	FY83:	TOTAL: \$24,509
Prin. Invest.	NASA Tech. Officer	CASE Category
Wu, C. S.	GSFC/Corrigan, J. P.	11-Astronomy

**NSG 5423 University of Maryland - College Park 2974**  
Geologic modeling of the Patapsco watershed Maryland

Period	Obligations	
10/15/79-08/14/84	FY83: \$103,192	TOTAL: \$260,936
Prin. Invest.	NASA Tech. Officer	CASE Category
Chang, C. C.	GSFC/Masuoka, E.	32-Geological Sci
	GSFC/Labovitz, M. L.	

**NSG 7046 University of Maryland - College Park 2975**  
Studies of the Apollo 15 and 16 orbital X-ray data

Period	Obligations	
05/01/74-03/31/83	FY83:	TOTAL: \$178,197
Prin. Invest.	NASA Tech. Officer	CASE Category
Roosen, J. G.	HQ-EL/Quaide, W. L.	32-Geological Sci

# **NASA'S UNIVERSITY PROGRAM** **MARYLAND (Continued)**

## **NSG 7322 University of Maryland - College Park 2976** Research on comets

Period	Obligations	
03/01/77-08/31/84	FY83: \$60,000	TOTAL: \$344,000
Prin. Invest.	NASA Tech. Officer	CASE Category
A'hearn, M. F.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Brinton, H. C.	

## **NSG 7340 University of Maryland - College Park 2977** Spectral studies related to dissociation of hydrogen-bromine, hydrogen-chloride and bromine-oxide

Period	Obligations	
06/16/77-08/14/83	FY83: \$27,000	TOTAL: \$210,583
Prin. Invest.	NASA Tech. Officer	CASE Category
Ginter, M. L.	HQ-EB/Watson, R. T.	13-Physics
	HQ-EE/Hilsenrath, E.	

## **NAG 5-602 University of Maryland - Eastern Shore 2978** Dispersion and instability in deep water surface waves

Period	Obligations	
03/01/82-02/28/83	FY83:	TOTAL: \$15,003
Prin. Invest.	NASA Tech. Officer	CASE Category
Dudis, J. J.	GSFC/Huang, N. E.	33-Oceanography
	WFC/Long, S. R.	

## **NAG 5-608 University of Maryland - Eastern Shore 2979** Gas-phase-titration system for nitric oxide

Period	Obligations	
06/20/82-10/19/82	FY83:	TOTAL: \$7,153
Prin. Invest.	NASA Tech. Officer	CASE Category
Hung, Y. W.	GSFC/Torres, A. L.	12-Chemistry

## **NAS 5-26464 University of Maryland - Eastern Shore 2980** Development of a Medas system for microcomputers

Period	Obligations	
02/18/81-02/18/84	FY83:	TOTAL: \$49,951
Prin. Invest.	NASA Tech. Officer	CASE Category
Chapin, E. W.	GSFC/Alterescu, S.	56-Medical Sciences

## **NCA 5-99 University of Maryland - Eastern Shore 2981** Engineering and pre-engineering activities

Period	Obligations	
06/16/82-08/15/84	FY83: \$40,900	TOTAL: \$80,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Rich, S.	GSFC/Mundy, J. R.	45-Elec Engr
	GSFC/Chapman, J. W.	

## **NCC 6-3201 University of Maryland - Eastern Shore 2982** Improvement of technical library sciences

Period	Obligations	
07/01/81-08/31/82	FY83: \$4,157	TOTAL: \$85,138
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, J. C.	GSFC/Foster, J. N.	99-Multi-Discip

## **NSG 7470 University of Maryland - Eastern Shore 2983** Optimization of agricultural productivity in closed ecological life support systems

Period	Obligations	
07/01/78-06/30/83	FY83:	TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Joshi, J. M.	HQ-LC/Pohly, J. G.	55-Agriculture Sci

# **MASSACHUSETTS**

## **NAG 2-180 Amherst College 2984** Production of monoclonal antibodies to human T-cells

Period	Obligations	
07/01/82-03/31/84	FY83: \$33,000	TOTAL: \$60,205
Prin. Invest.	NASA Tech. Officer	CASE Category
Goldsby, R. A.	ARC/Mandel, A. D.	51-Biological Sci

## **NAG 2-89 Boston College 2985** Dissociative recombination of O+2, NO+ and N+2

Period	Obligations	
02/01/81-01/31/84	FY83: \$44,122	TOTAL: \$121,789
Prin. Invest.	NASA Tech. Officer	CASE Category
Guberman, S. L.	ARC/Jaffe, R. L.	19-Phys Sci, NEC

## **NAG 5-227 Boston College 2986** Rapid variations of auroral kilometric radiation with auroras, field aligned currents and particles

Period	Obligations	
04/01/82-03/31/83	FY83:	TOTAL: \$24,997
Prin. Invest.	NASA Tech. Officer	CASE Category
Saflekos, N. A.	GSFC/Wales, R. O.	11-Astronomy

## **NCC 2-185 Boston College 2987** Solar wind in the distant heliosphere

Period	Obligations	
04/01/82-05/31/84	FY83: \$45,000	TOTAL: \$84,715
Prin. Invest.	NASA Tech. Officer	CASE Category
Feynman, J.	ARC/Barnes, A.	11-Astronomy

## **NSG 7468 Boston College 2988** Evaluate and assess the role of theorists in solar terrestrial research

Period	Obligations	
06/01/78-12/31/83	FY83:	TOTAL: \$66,442
Prin. Invest.	NASA Tech. Officer	CASE Category
Carovillano, R. L.	HQ-EZ/Birmingham, T. J.	39-Env Sci, NEC

## **NAG 1-276 Boston University 2989** Extension of the Green's function method for unsteady supersonic aerodynamic flow

Period	Obligations	
06/01/82-05/31/84	FY83: \$43,802	TOTAL: \$87,614
Prin. Invest.	NASA Tech. Officer	CASE Category
Freedman, M. I.	LARC/Yates, E. C., Jr.	41-Aero Engr
	LARC/Desmarais, R. N.	

## **NAG 2-179 Boston University 2990** Analytical investigation of the influence of transonic buffeting on the noise and unsteady

Period	Obligations	
06/01/82-11/30/83	FY83:	TOTAL: \$81,786
Prin. Invest.	NASA Tech. Officer	CASE Category
Ventres, C. S.	ARC/Smith, C.	39-Env Sci, NEC

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

<b>NAG 5-237</b>			<b>Boston University</b>	<b>2991</b>
Propagation of geomagnetic pulsation signals				
<i>Period</i>		<i>Obligations</i>		
05/01/82-08/31/84	FY83: \$25,000	TOTAL: \$50,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Hughes, W. J.	GSFC/Wales, R. O.	11-Astronomy		
<b>NGT 22-004-800</b>			<b>Boston University</b>	<b>2998</b>
Unsteady transonic aerodynamics research				
<i>Period</i>		<i>Obligations</i>		
09/01/80-08/31/84	FY83:	TOTAL: \$38,492		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Morino, L.	HQ-LB/Owens, F. C.	41-Aero Engr		
<b>NAG 8-435</b>			<b>Boston University</b>	<b>2992</b>
Search for 511 MeV electron-positron annihilation radiation from mildly active galactic nuclei				
<i>Period</i>		<i>Obligations</i>		
05/01/82-04/30/84	FY83:	TOTAL: \$13,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Marscher, A. P.	MSFC/Stone, J. F.	11-Astronomy		
Brecher, K.				
<b>NGT 22-004-801</b>			<b>Boston University</b>	<b>2999</b>
Unsteady transonic aerodynamics research				
<i>Period</i>		<i>Obligations</i>		
09/01/80-08/31/82	FY83:	TOTAL: \$23,585		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Morino, L.	HQ-LB/Carter, C. H.	41-Aero Engr		
<b>NGT 22-004-802</b>			<b>Boston University</b>	<b>3000</b>
Graduate student researchers program				
<i>Period</i>		<i>Obligations</i>		
09/01/80-05/31/84	FY83:	TOTAL: \$36,585		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Morino, L.	HQ-LB/Carter, C. H.	41-Aero Engr		
<b>NGT 22-008-803</b>			<b>Boston University</b>	<b>3001</b>
Graduate student researchers program				
<i>Period</i>		<i>Obligations</i>		
06/01/81-05/31/83	FY83:	TOTAL: \$26,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Udelson, D.	HQ-LB/Carter, C. H.	41-Aero Engr		
<b>NGT 22-008-804</b>			<b>Boston University</b>	<b>3002</b>
Graduate student researchers program				
<i>Period</i>		<i>Obligations</i>		
06/01/82-05/31/84	FY83: \$15,000	TOTAL: \$28,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Tseng, K.	HQ-LB/Owens, F. C.	41-Aero Engr		
<b>NGT 22-008-805</b>			<b>Boston University</b>	<b>3003</b>
Graduate student researchers program				
<i>Period</i>		<i>Obligations</i>		
06/01/82-08/31/84	FY83: \$15,000	TOTAL: \$28,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Tseng, K.	HQ-LB/Owens, F. C.	41-Aero Engr		
<b>NAG 8-32844</b>			<b>Boston University</b>	<b>2995</b>
Use of the Space Shuttle to create plasma holes for ionospheric and radio astronomical studies				
<i>Period</i>		<i>Obligations</i>		
10/01/77-09/30/85	FY83: \$33,000	TOTAL: \$149,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Meudillo, M.	MSFC/Guynes, B. V.	31-Atmos Sci		
	MSFC/Ise, R.			
<b>NGR 22-004-025</b>			<b>Boston University</b>	<b>2996</b>
Microbial contributions to the Precambrian Earth				
<i>Period</i>		<i>Obligations</i>		
12/15/70-12/31/83	FY83: \$72,468	TOTAL: \$602,750		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Margulis, L.	HQ-EB/Devincenzi, D. L.	32-Geological Sci		
	HQ-EB/Rambler, M. B.			
<b>NGR 22-004-030</b>			<b>Boston University</b>	<b>2997</b>
Compressible unsteady potential aerodynamic flow around lifting bodies having arbitrary shapes and motions				
<i>Period</i>		<i>Obligations</i>		
12/08/71-04/30/83	FY83:	TOTAL: \$745,882		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Morino, L.	LARC/Yates, E. C., Jr.	41-Aero Engr		
	LARC/Desmarais, R. N.			
<b>NAG 8-413</b>			<b>Brandeis University</b>	<b>3005</b>
A search for X-ray emission from a possible hot, diffuse gas surrounding the quasar 4C32.69				
<i>Period</i>		<i>Obligations</i>		
07/01/81-12/31/82	FY83:	TOTAL: \$8,951		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Wardle, J. F.	MSFC/Stone, J. F.	11-Astronomy		

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NAS 9-15147** **Brandeis University** **3006**  
Vestibular selection criteria development  
*Period* *Obligations*  
09/01/76-08/01/84 FY83: \$372,300 TOTAL: \$883,478  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lackner, J. R. JSC/Hornick, J. L. 59-Life Sci, NEC

**NAGW 417** **Hampshire College** **3007**  
Theoretical studies of the composition and evolution of planetary atmospheres  
*Period* *Obligations*  
01/01/83-01/31/84 FY83: \$60,000 TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McElroy, G. B. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NAG 1-55** **Harvard University** **3008**  
Sources and sinks for nitrous oxide and experimental studies of the sources of atmospheric gases  
*Period* *Obligations*  
04/03/80-07/31/84 FY83: \$398,951 TOTAL: \$717,820  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McElroy, M. B. LARC/Fishman, J. 31-Atmos Sci  
Wofsy, S. C. LARC/Rhinehart, R. P.

**NAG 5-72** **Harvard University** **3009**  
Observation of globular clusters and X-ray busters  
*Period* *Obligations*  
06/01/80-05/31/82 FY83: TOTAL: \$9,674  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Grindlay, J. E. GSFC/Boggess, A. 11-Astronomy  
Gursky, H.  
Davis, R.

**NAG 5-144** **Harvard University** **3010**  
High resolution ultraviolet cross section measurements of ozone  
*Period* *Obligations*  
03/01/81-02/15/84 FY83: \$79,541 TOTAL: \$214,124  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Parkinson, W. H. GSFC/Reed, E. I. 13-Physics  
Freeman, D. E. HQ-EB/Watson, R. T.  
Yoshino, K.

**NAG 5-189** **Harvard University** **3011**  
Observations of variable X-ray Seyfert galaxies  
*Period* *Obligations*  
08/01/81-09/30/83 FY83: \$9,700 TOTAL: \$22,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Geller, M. J. GSFC/Kondo, Y. 11-Astronomy  
Huchra, J. P.

**NAG 5-314** **Harvard University** **3012**  
Study of miocene and pliocene foredeep development and lithospheric flexure of the adriatic foreland (Italy and Yugoslavia)  
*Period* *Obligations*  
05/01/83-04/30/84 FY83: \$30,310 TOTAL: \$30,310  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
England, P. C. GSFC/Welker, J. E. 32-Geological Sci

**NAG 8-445** **Harvard University** **3013**  
Collaborative studies of solar-type and other coronae from the Einstein Observatory (HEAO-2)  
*Period* *Obligations*  
10/01/82-09/30/83 FY83: TOTAL: \$10,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rosner, R. MSFC/Stone, J. F. 11-Astronomy

**NAG 9-17** **Harvard University** **3014**  
Angiotensin antagonists and volume homeostasis: Studies in man, intact animals and isolated tissues  
*Period* *Obligations*  
03/06/81-03/05/84 FY83: \$45,000 TOTAL: \$131,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hollenberg, N. K. JSC/Leach, C. S. 56-Medical Sciences

**NAGW 2** **Harvard University** **3015**  
Coronal plasma processes: Heating and energetic balance of closed coronal structures  
*Period* *Obligations*  
11/01/79-09/30/83 FY83: TOTAL: \$59,865  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Vaiana, G. S. HQ-EZ/Chipman, E. 13-Physics

**NAGW 79** **Harvard University** **3016**  
Theoretical program in plasma and magnetohydrodynamics processes relevant to the solar corona and its analogues  
*Period* *Obligations*  
06/01/80-05/31/84 FY83: \$170,000 TOTAL: \$618,194  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rosner, R. HQ-EE/Butler, D. M. 11-Astronomy  
HQ-EE/Birmingham, T. J.

**NAGW 359** **Harvard University** **3017**  
Chemistry of stratospheres and tropospheres gases  
*Period* *Obligations*  
07/01/82-06/30/83 FY83: TOTAL: \$150,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McElroy, M. B. HQ-EE/Chandra, S. 11-Astronomy  
HQ-EE/Watson, R. T.

**NAGW 395** **Harvard University** **3018**  
Theoretical studies of the composition and evolution of the primitive atmospheric of Earth  
*Period* *Obligations*  
11/15/82-11/14/83 FY83: \$25,000 TOTAL: \$25,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Yung, Y. L. HQ-EB/Devincenzi, D. L. 12-Chemistry  
Pinto, J.

**NAGW 484** **Harvard University** **3019**  
Petrological and geochemical studies of Archaean ultramafic rocks from west Greenland  
*Period* *Obligations*  
08/01/83-02/29/84 FY83: \$5,577 TOTAL: \$5,577  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dymek, R. F. HQ-EL/Williams, R. J. 32-Geological Sci  
HQ-EL/French, B. M.

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NAS 2-10547 Harvard University 3020**  
Fluid and electrolyte homostasis during spaceflight: Elucidation of mechanisms in a primate

Period	Obligations
01/17/80-03/31/84	FY83: \$222,000 TOTAL: \$541,797
Prin. Invest.	NASA Tech. Officer CASE Category
Moore-ede, M. C.	ARC/Ferandin, J. 51-Biological Sci
	ARC/Connolly, J.

**NAS 8-32691 Harvard University 3027**  
Crystal nucleation in glass-forming alloy and pure metal melts under containerless and vibrationless conditions

Period	Obligations
06/23/78-05/15/83	FY83: TOTAL: \$199,050
Prin. Invest.	NASA Tech. Officer CASE Category
Turnbull, D.	MSFC/Fallon, R. A. 12-Chemistry
Spaepen, F.	MSFC/Savage, W. H.

**NAS 5-24134 Harvard University 3021**  
Investigation of the upper atmosphere using data from AE satellites

Period	Obligations
09/19/77-09/30/82	FY83: TOTAL: \$304,824
Prin. Invest.	NASA Tech. Officer CASE Category
McElroy, M. B.	GSFC/Bullock, G. D. 31-Atmos Sci

**NAS 8-35416 Harvard University 3028**  
Bulk formation of metallic glasses and amorphous silicon from the melt

Period	Obligations
05/16/83-05/15/86	FY83: \$64,000 TOTAL: \$64,000
Prin. Invest.	NASA Tech. Officer CASE Category
Spaepen, F.	MSFC/Gardner, L. B. 13-Physics

**NAS 5-25677 Harvard University 3022**  
Very long baseline interferometer upgrading implementation, operation and maintenance of the Harvard radio astronomy station

Period	Obligations
05/19/80-12/31/82	FY83: TOTAL: \$154,383
Prin. Invest.	NASA Tech. Officer CASE Category
Lilley, A. E.	GSFC/Clark, T. 99-Multi-Discip

**NASW 3242 Harvard University 3029**  
In-situ studies of free radicals in the Earth's stratosphere

Period	Obligations
07/05/78-03/31/84	FY83: \$1,387,744 TOTAL: \$6,793,089
Prin. Invest.	NASA Tech. Officer CASE Category
Anderson, J. G.	HQ-EE/Watson, R. T. 31-Atmos Sci
	HQ-EE/Hilsenrath, E.

**NAS 5-26557 Harvard University 3023**  
Preliminary definition phase effort for the solar irradiance spectrometer for Spacelab

Period	Obligations
07/01/81-09/30/83	FY83: \$60,000 TOTAL: \$110,000
Prin. Invest.	NASA Tech. Officer CASE Category
Parkinson, W. H.	GSFC/Lundholm, J. 31-Atmos Sci

**NCA 2-284101 Harvard University 3030**  
A mathematical model to assess and predict the effects of imposed work-rest schedules on the circadian timing system

Period	Obligations
06/01/81-12/31/82	FY83: TOTAL: \$47,367
Prin. Invest.	NASA Tech. Officer CASE Category
Gander, P. H.	ARC/Lauber, J. K. 51-Biological Sci
Kronauer, R. E.	
Moore-ede, M. C.	

**NAS 5-27229 Harvard University 3024**  
Studies of continual deformation plate motion, and polar motion, using geodetic data from space techniques

Period	Obligations
08/12/82-08/12/84	FY83: TOTAL: \$76,000
Prin. Invest.	NASA Tech. Officer CASE Category
O'Connell, R. J.	GSFC/Mead, G. D. 32-Geological Sci
England, P. C.	

**NGL 22-007-006 Harvard University 3031**  
Theoretical and experimental studies on ultraviolet solar physics

Period	Obligations
07/10/83-10/31/83	FY83: \$130,000 TOTAL: \$5,865,398
Prin. Invest.	NASA Tech. Officer CASE Category
Parkinson, W. H.	HQ-EZ/Chipman, E. G. 13-Physics

**NAS 5-27571 Harvard University 3025**  
VLBI determination and interpretation of relative motions within a network of sites in North America and Europe

Period	Obligations
03/01/83-07/31/84	FY83: \$85,963 TOTAL: \$85,963
Prin. Invest.	NASA Tech. Officer CASE Category
Shapiro, I. I.	GSFC/Mead, G. D. 32-Geological Sci
Counselman, C. C.	

**NGL 22-007-069 Harvard University 3032**  
Infrared absorption spectrophotometry of organic extractives from Precambrian sediments

Period	Obligations
05/29/66-06/30/83	FY83: TOTAL: \$512,964
Prin. Invest.	NASA Tech. Officer CASE Category
Barghoorn, E. S.	HQ-EB/Devincenzi, D. L. 32-Geological Sci

**NAS 6-3061 Harvard University 3026**  
Reel down/reel up technique for stratospheric and tropospheric observations

Period	Obligations
10/15/79-12/15/82	FY83: TOTAL: \$130,942
Prin. Invest.	NASA Tech. Officer CASE Category
Anderson, J. G.	GSFC/Ballance, C. W. 31-Atmos Sci

**NGL 22-007-228 Harvard University 3033**  
Theoretical investigation of multiphase in Jupiter interior and possible relationship to behavior of outer atmospheric layers

Period	Obligations
12/15/71-10/31/83	FY83: \$499,000 TOTAL: \$3,136,223
Prin. Invest.	NASA Tech. Officer CASE Category
Goody, R. M.	HQ-EL/Brinton, H. C. 31-Atmos Sci
Lindzen, R. S.	HQ-EL/Brunk, W. E.

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<b>NGR 22-007-269</b>	<b>Harvard University</b>		<b>3034</b>
	Theoretical research in planetary physics		
	<i>Period</i>	<i>Obligations</i>	
	09/01/73-02/29/84	FY83: \$56,093 TOTAL: \$569,166	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Cameron, A. G.	HQ-EL/Quaide, W. L.	32-Geological Sci
		HQ-EL/French, B. M.	
<b>NGR 22-007-272</b>	<b>Harvard University</b>		<b>3035</b>
	Theoretical studies in space astronomy		
	<i>Period</i>	<i>Obligations</i>	
	09/01/73-09/30/83	FY83: \$66,000 TOTAL: \$449,852	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Cameron, A. G.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
		HQ-EZ/Opp, A. G.	
<b>NSG 2031</b>	<b>Harvard University</b>		<b>3036</b>
	Chemistry and dynamics of trace stratospheric gases		
	<i>Period</i>	<i>Obligations</i>	
	07/01/74-03/30/82	FY83: TOTAL: \$652,645	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	McElroy, M. B.	HQ-EB/Chandra, S.	31-Atmos Sci
		HQ-EB/Watson, R. T.	
<b>NSG 2265</b>	<b>Harvard University</b>		<b>3037</b>
	Geometrical methods for nonlinear dynamics		
	<i>Period</i>	<i>Obligations</i>	
	09/01/77-10/31/83	FY83: \$35,000 TOTAL: \$181,681	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Byrnes, C. I.	ARC/Meyer, G.	49-Engr, NEC
		ARC/Doolin, B. F.	
<b>NSG 5128</b>	<b>Harvard University</b>		<b>3038</b>
	Lyman alpha coronagraph research sounding rocket program		
	<i>Period</i>	<i>Obligations</i>	
	07/15/76-10/31/84	FY83: TOTAL: \$1,780,876	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Parkinson, W. H.	GSFC/Early, L. J.	13-Physics
	Kohl, J. L.	HQ-EZ/Bohlin, J. D.	
<b>NSG 5176</b>	<b>Harvard University</b>		<b>3039</b>
	Research of high resolution vacuum ultraviolet absorption cross-sections of stratospheric molecules		
	<i>Period</i>	<i>Obligations</i>	
	06/01/77-10/31/84	FY83: TOTAL: \$370,331	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Parkinson, W. H.	GSFC/Frederick, J. E.	13-Physics
	Freeman, D. E.	HQ-EE/Watson, R. T.	
	Yoshino, K.		
<b>NSG 5228</b>	<b>Harvard University</b>		<b>3040</b>
	Dynamics and evaluation of Gulf Stream meanders		
	<i>Period</i>	<i>Obligations</i>	
	02/01/78-12/31/82	FY83: TOTAL: \$212,807	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Robinson, A. R.	GSFC/Halem, M.	33-Oceanography
<b>NSG 7176</b>	<b>Harvard University</b>		<b>3041</b>
	Participation in NASA core funding		
	<i>Period</i>	<i>Obligations</i>	
	11/01/75-03/31/84	FY83: \$140,000 TOTAL: \$1,844,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Field, G. B.	HQ-EP/Rosendhal, J. D.	11-Astronomy
	McElroy, M. B.	HQ-EP/Schrom, J.	
<b>NSG 7304</b>	<b>Harvard University</b>		<b>3042</b>
	Absolute transition probabilities in ultraviolet spectra of interstellar molecules		
	<i>Period</i>	<i>Obligations</i>	
	12/15/76-03/14/84	FY83: \$65,773 TOTAL: \$346,988	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Parkinson, W. H.	HQ-EZ/Stencel, R. E.	11-Astronomy
		HQ-EZ/Weiler, E. J.	
<b>NSG 7648</b>	<b>Harvard University</b>		<b>3043</b>
	Solar Maximum Mission: Ground support programs at the Harvard radio astronomy station		
	<i>Period</i>	<i>Obligations</i>	
	07/01/79-12/31/82	FY83: TOTAL: \$217,427	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Maxwell, A.	HQ-EZ/Chipman, E.	13-Physics
<b>NSG 9054</b>	<b>Harvard University</b>		<b>3044</b>
	Fluid and electrolyte homeostasis during spaceflight: Ground-based preparative studies in a primate		
	<i>Period</i>	<i>Obligations</i>	
	02/01/77-01/31/84	FY83: \$50,000 TOTAL: \$334,160	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Moore-ede, M. C.	JSC/Leach, C. S.	56-Medical Sciences
<b>NAG 1-2</b>	<b>Massachusetts Institute of Technology</b>		<b>3045</b>
	Hybrid operator models for digitally-implemented control systems		
	<i>Period</i>	<i>Obligations</i>	
	12/01/79-01/31/82	FY83: TOTAL: \$40,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Stein, G.	LARC/Elliott, J. R.	45-Elec Engr
		LARC/Price, D. B.	
<b>NAG 1-48</b>	<b>Massachusetts Institute of Technology</b>		<b>3046</b>
	Development of higher power single mode PbSnTe/PbTeSe diode lasers		
	<i>Period</i>	<i>Obligations</i>	
	03/01/80-03/15/84	FY83: \$80,000 TOTAL: \$230,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Fonstad, C. G.	LARC/Magee, C. J.	45-Elec Engr
		ARC/Miller, W. E.	
<b>NAG 1-60</b>	<b>Massachusetts Institute of Technology</b>		<b>3047</b>
	Research on unsteady, three-dimensional transonic flow		
	<i>Period</i>	<i>Obligations</i>	
	05/01/80-04/30/82	FY83: TOTAL: \$103,902	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Harris, W. L.	LARC/Bland, S. R.	41-Aero Engr
		LARC/Whitlow, W.	

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**NAG 1-92 Massachusetts Institute of Technology 3048**  
Analysis of remote measurements of carbon monoxide from  
Convair 990 during monsoon experiment

Period	Obligations	
09/01/80-12/31/81	FY83:	TOTAL: \$46,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Newell, R. E.	LARC/Reichle, H. G.	31-Atmos Sci
	LARC/Wallio, H. A.	

**NAG 1-98 Massachusetts Institute of Technology 3049**  
Photovoltaic effect in ferroelectric ceramics

Period	Obligations	
09/01/80-10/31/81	FY83:	TOTAL: \$52,383
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Epstein, D. J.	LARC/Hayes, P. J.	45-Elec Engr
Linz, A.		
Jenssen, H. P.		

**NAG 1-100 Massachusetts Institute of Technology 3050**  
Microwave heating of supercooled water droplets

Period	Obligations	
09/01/80-06/30/82	FY83:	TOTAL: \$73,659
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hollister, W. M.	LARC/Bailey, M. C.	13-Physics

**NAG 1-126 Massachusetts Institute of Technology 3051**  
Reliability issues in active control of large flexible space  
structures

Period	Obligations	
11/15/80-11/14/83	FY83: \$120,341	TOTAL: \$299,421
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Vandervelde, W. E.	LARC/Montgomery, R. C.	41-Aero Engr
	LARC/Williams, J. P.	

**NAG 1-140 Massachusetts Institute of Technology 3052**  
Combined applications of airborne traffic situation displays to  
terminal operations

Period	Obligations	
12/19/80-12/18/81	FY83:	TOTAL: \$56,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Athans, M.	LARC/Kelley, J. R.	41-Aero Engr
	LARC/Knox, C. E.	

**NAG 1-164 Massachusetts Institute of Technology 3053**  
Study of noise, excess noise, and tunable local oscillator  
performance of lead-salt diode lasers

Period	Obligations	
03/15/81-09/30/83	FY83:	TOTAL: \$150,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Freed, C.	LARC/Katzberg, S. J.	13-Physics
Fonstad, C. G.		

**NAG 1-206 Massachusetts Institute of Technology 3054**  
Cooperative program for stimulate student involvement through  
undergraduate research opportunity program

Period	Obligations	
09/01/81-11/30/83	FY83: \$45,000	TOTAL: \$99,948
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Covert, E. E.	LARC/Kilgore, R. A.	41-Aero Engr
Murman, E. M.	LARC/Boyden, R. P.	
Baron, J. R.		

**NAG 1-229 Massachusetts Institute of Technology 3055**  
Computational analysis of scramjet dural mode operations

Period	Obligations	
11/01/81-10/31/83	FY83: \$58,541	TOTAL: \$109,896
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Murman, E. M.	LARC/Anderson, G. Y.	41-Aero Engr
	LARC/Beach, H. L.	

**NAG 1-292 Massachusetts Institute of Technology 3056**  
Meteorological analysis of measurement of air pollution from  
satellites (MAPS) first shuttle

Period	Obligations	
07/15/82-01/14/83	FY83:	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Newell, R. E.	LARC/Reichle, H. G., Jr.	31-Atmos Sci
	LARC/Hypes, W. D.	

**NAG 1-329 Massachusetts Institute of Technology 3057**  
Unsteady, two-dimensional transonic flow

Period	Obligations	
02/01/83-05/31/83	FY83: \$9,994	TOTAL: \$9,994
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Harris, W. L.	LARC/Bland, S. R.	41-Aero Engr
	LARC/Whitlow, W.	

**NAG 1-358 Massachusetts Institute of Technology 3058**  
Computational methods for vortex dominated compressible  
flows

Period	Obligations	
04/01/83-06/30/84	FY83: \$53,943	TOTAL: \$53,943
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Murman, E. M.	LARC/Waggoner, E. G.	41-Aero Engr
	LARC/South, J. C., Jr.	

**NAG 2-12 Massachusetts Institute of Technology 3059**  
Research on visual vestibular interaction and its application to  
flight simulation

Period	Obligations	
12/01/79-11/30/83	FY83: \$83,000	TOTAL: \$339,681
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Young, L. R.	ARC/Stewart, J. D.	49-Engr, NEC
Oman, C. M.	ARC/Bray, R. S.	
Kenyon, R.		

**NAG 2-47 Massachusetts Institute of Technology 3060**  
Development of analytical techniques for rotor aerodynamic  
analysis

Period	Obligations	
10/01/80-03/31/82	FY83:	TOTAL: \$58,508
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Miller, R. H.	ARC/Piziali, R. A.	41-Aero Engr

**NAG 2-88 Massachusetts Institute of Technology 3061**  
Habituation of novel visual vestibular environments with particular  
reference to space flight

Period	Obligations	
01/16/81-01/15/84	FY83: \$82,500	TOTAL: \$287,514
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Young, L. R.	ARC/Daunton, N. G.	51-Biological Sci

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**NAG 2-90 Massachusetts Institute of Technology 3062**  
Carbon deposition in the Bosch process with ruthenium and ruthenium-iron alloy catalysts

Period	Obligations
01/01/81-07/31/82	FY83: TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer CASE Category
Reid, R. C.	ARC/Quattrone, P. D. 59-Life Sci, NEC
Manning, M. P.	

**NAG 2-103 Massachusetts Institute of Technology 3063**  
The mutual relationship between central and peripheral vision

Period	Obligations
03/01/81-02/28/83	FY83: TOTAL: \$70,000
Prin. Invest.	NASA Tech. Officer CASE Category
Kenyon, R. V.	ARC/Remington, R. W. 69-Psych, NEC

**NAG 2-105 Massachusetts Institute of Technology 3064**  
Computational methods for nonlinear vortex wake flow fields

Period	Obligations
02/15/81-03/31/84	FY83: \$49,754 TOTAL: \$148,743
Prin. Invest.	NASA Tech. Officer CASE Category
Murman, E. M.	ARC/Hicks, R. M. 41-Aero Engr

**NAG 2-115 Massachusetts Institute of Technology 3065**  
Computational methods for aerodynamic design using numerical optimization

Period	Obligations
06/01/81-11/30/82	FY83: TOTAL: \$60,022
Prin. Invest.	NASA Tech. Officer CASE Category
Murman, E. M.	ARC/Chapman, G. C. 41-Aero Engr
	ARC/Hicks, R. M.

**NAG 2-124 Massachusetts Institute of Technology 3066**  
Vestibulocerebellar anatomy and histochemistry: A study of neural structures underlying motion sickness

Period	Obligations
07/01/81-12/31/83	FY83: \$50,500 TOTAL: \$131,500
Prin. Invest.	NASA Tech. Officer CASE Category
Graybiel, A. M.	ARC/Mehler, W. R. 56-Medical Sciences

**NAG 2-126 Massachusetts Institute of Technology 3067**  
Neural mechanisms subserving head movements

Period	Obligations
07/01/81-12/31/83	FY83: \$38,500 TOTAL: \$93,500
Prin. Invest.	NASA Tech. Officer CASE Category
Bizzi, E.	ARC/Daunton, N. G. 51-Biological Sci
	ARC/Suri, K.

**NAG 2-132 Massachusetts Institute of Technology 3068**  
Effects of consuming various foods and nutrients on subjective aspects of human performance and behavior

Period	Obligations
09/01/81-12/31/83	FY83: \$26,906 TOTAL: \$136,333
Prin. Invest.	NASA Tech. Officer CASE Category
Wurtman, R. J.	ARC/Patton, R. M. 61-Biol Aspects

**NAG 2-182 Massachusetts Institute of Technology 3069**  
Correlation of experimental and theoretical results applied to a model helicopter rotor generating blade slap

Period	Obligations
06/15/82-12/14/83	FY83: \$40,000 TOTAL: \$107,000
Prin. Invest.	NASA Tech. Officer CASE Category
Hubbard, J. E., Jr.	ARC/Smith, C. A. 41-Aero Engr
	ARC/Warmbrodt, W. G.

**NAG 2-190 Massachusetts Institute of Technology 3070**  
Advanced automated control of aircraft in terminal airspace

Period	Obligations
08/01/82-07/31/84	FY83: \$74,249 TOTAL: \$154,145
Prin. Invest.	NASA Tech. Officer CASE Category
Simpson, R. W.	ARC/Tobias, L. 41-Aero Engr
	ARC/Erzberger, H.

**NAG 2-210 Massachusetts Institute of Technology 3071**  
'Nutritional control of brain neurotransmitters'

Period	Obligations
11/01/82-10/31/83	FY83: \$89,200 TOTAL: \$89,200
Prin. Invest.	NASA Tech. Officer CASE Category
Wurtman, R. J.	ARC/Winget, C. M. 56-Medical Sciences

**NAG 2-224 Massachusetts Institute of Technology 3072**  
Supercritical water oxidation of products of human metabolism

Period	Obligations
01/01/83-06/30/84	FY83: \$232,334 TOTAL: \$232,334
Prin. Invest.	NASA Tech. Officer CASE Category
Hall, G. A.	ARC/Wydwon, J. 43-Chem Engr
	ARC/Quattrove, P. R.

**NAG 2-227 Massachusetts Institute of Technology 3073**  
The relationship between aircraft control automation, mental workload, and pilot error in a laboratory simulator

Period	Obligations
01/01/83-12/31/83	FY83: \$32,977 TOTAL: \$32,977
Prin. Invest.	NASA Tech. Officer CASE Category
Sheridan, T.	ARC/Hart, S. G. 69-Psych, NEC

**NAG 2-247 Massachusetts Institute of Technology 3074**  
Specification of a data flow computer for aerodynamic simulation

Period	Obligations
07/01/83-12/31/83	FY83: \$50,000 TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer CASE Category
Dennis, J. B.	ARC/Stevens, K. G. 22-Computer Science
	ARC/Schulbach, C. H.

**NAG 2-251 Massachusetts Institute of Technology 3075**  
Vortex-wake dynamics: Application to rotor airload calculations

Period	Obligations
09/01/83-08/31/84	FY83: \$73,424 TOTAL: \$73,424
Prin. Invest.	NASA Tech. Officer CASE Category
Widnall, S. E.	ARC/Johnson, W. R. 41-Aero Engr



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**NAG 3-9 Massachusetts Institute of Technology 3076**  
Research applied to transonic compressors in numerical fluid mechanics of inviscid flow and viscous flow

Period	Obligations
12/01/79-11/30/84	FY83: \$79,352 TOTAL: \$363,372
Prin. Invest.	NASA Tech. Officer CASE Category
Thompkins, W. T., Jr.	LERC/Chima, R. V. 41-Aero Engr
Murman, E. M.	LERC/Sockol, P. M.

**NAG 3-257 Massachusetts Institute of Technology 3083**  
Variable reluctance motors for electric vehicle propulsion systems

Period	Obligations
02/05/82-05/31/83	FY83: TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer CASE Category
Lang, J. H.	LERC/Maslowski, E. A. 45-Elec Engr

**NAG 3-33 Massachusetts Institute of Technology 3077**  
Advanced stress analysis of turbine engine structures

Period	Obligations
04/01/80-03/29/84	FY83: \$80,827 TOTAL: \$276,553
Prin. Invest.	NASA Tech. Officer CASE Category
Pian, T. H.	LERC/Chamis, C. C. 46-Mech Engr
	LERC/Johns, R. H.

**NAG 3-280 Massachusetts Institute of Technology 3084**  
Thermomechanical low cycle fatigue research

Period	Obligations
07/01/82-09/29/84	FY83: \$65,072 TOTAL: \$127,734
Prin. Invest.	NASA Tech. Officer CASE Category
Pelloux, R. M.	LERC/Barrow, B. J. 47-Materials Engr
Marchand, N.	LERC/Bill, R. C.

**NAG 3-82 Massachusetts Institute of Technology 3078**  
Development and use of generalized internal combustion engine cycle simulations

Period	Obligations
06/23/80-12/27/83	FY83: TOTAL: \$253,379
Prin. Invest.	NASA Tech. Officer CASE Category
Heywood, J. B.	LERC/Schock, H. J. 41-Aero Engr

**NAG 3-283 Massachusetts Institute of Technology 3085**  
Electromagnetic accelerator technology

Period	Obligations
05/15/82-09/02/84	FY83: \$105,046 TOTAL: \$145,535
Prin. Invest.	NASA Tech. Officer CASE Category
Holm, H.	LERC/Terdan, F. F. 13-Physics
Graneau, P.	LERC/Kerslake, W.
Mongeau, P.	

**NAG 3-173 Massachusetts Institute of Technology 3079**  
Effect of gravity on minimum ignition energies of premixed gases

Period	Obligations
04/06/81-04/04/84	FY83: \$51,089 TOTAL: \$139,051
Prin. Invest.	NASA Tech. Officer CASE Category
Wachman, H. Y.	LERC/Vento, D. M. 49-Engr, NEC
Williams, G. C.	

**NAG 3-312 Massachusetts Institute of Technology 3086**  
Processing of laser former SiC powers

Period	Obligations
07/30/82-10/31/83	FY83: TOTAL: \$45,273
Prin. Invest.	NASA Tech. Officer CASE Category
Haggerty, J. S.	LERC/Dutta, S. 47-Materials Engr
Bowen, H. K.	

**NAG 3-200 Massachusetts Institute of Technology 3080**  
Structural response of a rotating bladed disc to rotor whirl

Period	Obligations
10/01/81-11/29/83	FY83: \$73,648 TOTAL: \$144,013
Prin. Invest.	NASA Tech. Officer CASE Category
Crawley, E. F.	LERC/Kielb, R. E. 41-Aero Engr

**NAG 3-328 Massachusetts Institute of Technology 3087**  
Wave propagation in fiber composites relating to acoustic ultrasonic NDE techniques

Period	Obligations
10/06/82-01/05/84	FY83: \$50,360 TOTAL: \$50,360
Prin. Invest.	NASA Tech. Officer CASE Category
Williams, J. H., Jr.	LERC/Vary, A. 47-Materials Engr
Lee, S. S.	

**NAG 3-214 Massachusetts Institute of Technology 3081**  
Graduate student researchers program in rotor flutter and vibration

Period	Obligations
09/25/81-09/23/83	FY83: TOTAL: \$63,127
Prin. Invest.	NASA Tech. Officer CASE Category
Dugunkji, J.	LERC/Kielb, R. E. 41-Aero Engr

**NAG 3-334 Massachusetts Institute of Technology 3088**  
Coordination of the NASA HPF research

Period	Obligations
09/15/82-12/15/82	FY83: TOTAL: \$5,095
Prin. Invest.	NASA Tech. Officer CASE Category
Epstein, A. H.	LERC/Rohde, J. E. 41-Aero Engr

**NAG 3-215 Massachusetts Institute of Technology 3082**  
Study of microwave properties of gallium arsenide field effect transistors

Period	Obligations
10/15/81-10/14/82	FY83: TOTAL: \$51,728
Prin. Invest.	NASA Tech. Officer CASE Category
Burke, B. F.	LERC/Connolly, D. J. 45-Elec Engr

**NAG 3-335 Massachusetts Institute of Technology 3089**  
Impingement cooling of gas turbine blades in a rotating system

Period	Obligations
09/20/82-09/18/84	FY83: \$65,000 TOTAL: \$140,028
Prin. Invest.	NASA Tech. Officer CASE Category
Epstein, A. H.	LERC/Rohde, J. E. 46-Mech Engr

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**NAG 3-365 Massachusetts Institute of Technology 3090**  
Mathematical modelling of the production and the physical characterization of rapidly solidified nickel based superalloys

Period	Obligations	
12/01/82-11/30/83	FY83: \$56,064	TOTAL: \$56,064
Prin. Invest.	NASA Tech. Officer	CASE Category
Szekely, J.	LERC/Gray, H. R.	47-Materials Engr
Vander Sande, J. B.		

**NAG 3-377 Massachusetts Institute of Technology 3091**  
Structural characterization of high temperature composites

Period	Obligations	
12/10/82-12/09/83	FY83: \$87,287	TOTAL: \$87,287
Prin. Invest.	NASA Tech. Officer	CASE Category
Mandell, J. F.	LERC/Chamis, C. C.	41-Aero Engr
	LERC/Johns, R. H.	

**NAG 3-378 Massachusetts Institute of Technology 3092**  
Horizontal axis windturbine aerodynamic noise

Period	Obligations	
12/15/82-12/14/83	FY83: \$54,602	TOTAL: \$54,602
Prin. Invest.	NASA Tech. Officer	CASE Category
Harris, W. L.	LERC/Spera, D. A.	41-Aero Engr
	LERC/Janetzke, D. C.	

**NAG 3-394 Massachusetts Institute of Technology 3093**  
A computer simulation of the heavy duty turbocompounded diesel cycle for studies of engine efficiency and performance

Period	Obligations	
02/15/83-02/14/84	FY83: \$185,625	TOTAL: \$185,625
Prin. Invest.	NASA Tech. Officer	CASE Category
Heywood, J. B.	LERC/Wood, J. C.	46-Mech Engr
Ekchian, J. A.		

**NAG 3-439 Massachusetts Institute of Technology 3094**  
High conductivity intercalated graphite fibers

Period	Obligations	
06/28/83-06/27/84	FY83: \$50,000	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Dresselhaus, M. S.	LERC/Banks, B. A.	13-Physics

**NAG 5-10 Massachusetts Institute of Technology 3095**  
Improved microwave retrieval techniques for atmospheric temperatures, winds and humidity

Period	Obligations	
02/01/80-07/31/84	FY83: \$105,000	TOTAL: \$369,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Eaton, J. K.	GSFC/Susskind, J.	31-Atmos Sci
Rosenkranz, P. W.		

**NAG 5-19 Massachusetts Institute of Technology 3096**  
Seismicity and active tectonics of the Andes and the origin of the Altiplano

Period	Obligations	
03/01/80-09/30/82	FY83:	TOTAL: \$119,494
Prin. Invest.	NASA Tech. Officer	CASE Category
Molnar, P.	GSFC/Kouns, C. W.	32-Geological Sci
Burchfield, B. C.		

**NAG 5-41 Massachusetts Institute of Technology 3097**  
Geophysical study of the structures and processes of the continental convergence zones

Period	Obligations	
05/01/80-12/31/83	FY83:	TOTAL: \$181,600
Prin. Invest.	NASA Tech. Officer	CASE Category
Toksoz, M. N.	GSFC/Kouns, C. W.	32-Geological Sci
Molnar, P.	GSFC/Frey, H. V.	

**NAG 5-43 Massachusetts Institute of Technology 3098**  
Observations of the ultraviolet spectra of astronomical sources

Period	Obligations	
04/15/80-04/14/82	FY83:	TOTAL: \$7,569
Prin. Invest.	NASA Tech. Officer	CASE Category
McClintock, J. E.	GSFC/Boggess, A.	11-Astronomy

**NAG 5-44 Massachusetts Institute of Technology 3099**  
Application of laser ranging and very long baseline interferometer data to a study of plate tectonic driving forces

Period	Obligations	
05/01/80-09/30/83	FY83:	TOTAL: \$183,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Solomon, S. C.	GSFC/Welker, J.	32-Geological Sci
Toksoz, M. N.		

**NAG 5-134 Massachusetts Institute of Technology 3100**  
Second-order Budyko-type parameterization of of landsurfaces hydrology

Period	Obligations	
01/01/81-12/31/83	FY83:	TOTAL: \$138,939
Prin. Invest.	NASA Tech. Officer	CASE Category
Eagleson, P. S.	GSFC/Shukla, J.	31-Atmos Sci

**NAG 5-137 Massachusetts Institute of Technology 3101**  
Mechanisms of interannual ocean atmosphere interactions

Period	Obligations	
02/01/81-07/31/84	FY83:	TOTAL: \$69,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Stone, P. H.	GSFC/Shukla, J.	31-Atmos Sci
Frankignoul, C. F.		

**NAG 5-141 Massachusetts Institute of Technology 3102**  
Remote sensing of vegetation of soil moisture

Period	Obligations	
03/01/81-02/29/84	FY83: \$45,000	TOTAL: \$135,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Kong, J. A.	GSFC/Wang, J. R.	39-Env Sci, NEC
	GSFC/Schmugge, T.	

**NAG 5-147 Massachusetts Institute of Technology 3103**  
Characterization of potential sources of magnetic anomalies

Period	Obligations	
04/01/81-06/30/82	FY83:	TOTAL: \$14,650
Prin. Invest.	NASA Tech. Officer	CASE Category
Spear, F. S.	GSFC/Kouns, C. W.	32-Geological Sci

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**NAG 5-149 Massachusetts Institute of Technology 3104**  
Study of seismic wave velocity structure in the downgoing slab

Period	Obligations	
04/15/81-04/14/84	FY83: \$49,995	TOTAL: \$165,872
Prin. Invest.	NASA Tech. Officer	CASE Category
Molnar, P.	GSFC/Kouns, C. W.	32-Geological Sci
	GSFC/McAdoo, D.	

**NAG 5-170 Massachusetts Institute of Technology 3105**  
Observations of X-ray binaries

Period	Obligations	
05/01/81-04/30/82	FY83:	TOTAL: \$4,465
Prin. Invest.	NASA Tech. Officer	CASE Category
Kallman, T. R.	GSFC/Boggess, A.	11-Astronomy
Hammerschlag, G.		
Vandenhoevel, E. P.		

**NAG 5-192 Massachusetts Institute of Technology 3106**  
Absorption line studies of giant shells in the galactic disk

Period	Obligations	
07/01/81-06/30/83	FY83:	TOTAL: \$11,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Cowie, L. L.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-248 Massachusetts Institute of Technology 3107**  
Research of the extent of a gaseous halo

Period	Obligations	
08/01/82-01/31/84	FY83: \$10,100	TOTAL: \$15,100
Prin. Invest.	NASA Tech. Officer	CASE Category
Tremaine, S. D.	GSFC/Kondo, Y.	11-Astronomy
York, D. G.		
Cowie, A. S.		

**NAG 5-270 Massachusetts Institute of Technology 3108**  
Remote sensing of Earth terrain

Period	Obligations	
09/01/82-08/31/84	FY83: \$58,530	TOTAL: \$100,530
Prin. Invest.	NASA Tech. Officer	CASE Category
Kong, J. A.	GSFC/Chang, A.	55-Agriculture Sci

**NAG 5-300 Massachusetts Institute of Technology 3109**  
Seismicity and active tectonics of the Andes and the origin of the Altylone

Period	Obligations	
03/15/83-03/14/84	FY83: \$49,973	TOTAL: \$49,973
Prin. Invest.	NASA Tech. Officer	CASE Category
Molnar, P.	GSFC/Kouns, C. W.	32-Geological Sci
Burchfiel, B. C.	GSFC/Frey, H.	

**NAG 5-307 Massachusetts Institute of Technology 3110**  
Determination of general circulation of the ocean and marine geoid

Period	Obligations	
03/15/83-03/14/84	FY83: \$142,900	TOTAL: \$142,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Wunsch, C.	GSFC/Kirk, R. G.	33-Oceanography

**NAG 5-322 Massachusetts Institute of Technology 3111**  
Numerical and data analysis of oceanographic studies

Period	Obligations	
05/15/83-05/14/84	FY83: \$85,000	TOTAL: \$85,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Harrison, D. E.	GSFC/Kirk, R. G.	33-Oceanography

**NAG 5-612 Massachusetts Institute of Technology 3112**  
Research and water surface wavelet distribution and characteristics

Period	Obligations	
09/30/82-09/29/83	FY83: \$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Christensen, E. M.	GSFC/Huang, N. E.	33-Oceanography

**NAG 9-12 Massachusetts Institute of Technology 3113**  
Thermal histories of lunar rocks

Period	Obligations	
02/01/81-06/01/83	FY83:	TOTAL: \$108,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Uhlmann, D. R.	JSC/Dietrich, J. W.	73-History

**NAGW 14 Massachusetts Institute of Technology 3114**  
Feasibility and development study of a mercuric iodide solid state spectrometer for advanced X-ray astrophysics facility

Period	Obligations	
10/01/79-10/31/82	FY83:	TOTAL: \$282,245
Prin. Invest.	NASA Tech. Officer	CASE Category
Ricker, G. R.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Opp, A. G.	

**NAGW 21 Massachusetts Institute of Technology 3115**  
Research program encompassed by space engineering

Period	Obligations	
11/01/79-09/30/83	FY83: \$406,944	TOTAL: \$1,402,935
Prin. Invest.	NASA Tech. Officer	CASE Category
Mar, J. W.	HQ-RT/Venneri, S. L.	42-Astro Engr
Miller, R. H.		

**NAGW 68 Massachusetts Institute of Technology 3116**  
Studies of planetary upper atmospheres through occultations

Period	Obligations	
07/01/80-06/30/82	FY83:	TOTAL: \$89,278
Prin. Invest.	NASA Tech. Officer	CASE Category
Elliot, J. E.	HQ-EL/Murphy, R. E.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 114 Massachusetts Institute of Technology 3117**  
Clays and the origin of life

Period	Obligations	
10/01/80-10/31/83	FY83: \$82,128	TOTAL: \$226,683
Prin. Invest.	NASA Tech. Officer	CASE Category
Prinn, D. G.	HQ-EB/Devincenzi, D. L.	12-Chemistry
Hartman, H.		

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**NAGW 165 Massachusetts Institute of Technology 3118**  
A program of extended analysis of Voyager plasma data with special emphasis on results obtained at Jupiter encounter

Period	Obligations	
03/15/81-03/14/84	FY83: \$230,000	TOTAL: \$405,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bridge, H. S.	HQ-EL/Quaide, W. L.	13-Physics
	HQ-EL/Evans, N.	

**NAGW 191 Massachusetts Institute of Technology 3119**  
Internal and surface evolution of the Galilean satellites

Period	Obligations	
04/01/81-06/30/84	FY83: \$50,000	TOTAL: \$143,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Solomon, S.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/Boyce, J. M.	

**NAGW 208 Massachusetts Institute of Technology 3120**  
Theoretical astrophysical studies related to space astronomy

Period	Obligations	
07/01/81-06/30/83	FY83:	TOTAL: \$62,759
Prin. Invest.	NASA Tech. Officer	CASE Category
Cowle, L. L.	HQ-EZ/Weiler, E. J.	11-Astronomy
	HQ-EZ/Bogges, N. W.	

**NAGW 215 Massachusetts Institute of Technology 3121**  
Electromagnetic perturbations and scattering of Jupiter ring dust

Period	Obligations	
06/01/81-05/31/82	FY83:	TOTAL: \$24,809
Prin. Invest.	NASA Tech. Officer	CASE Category
Shapiro, I. I.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

**NAGW 232 Massachusetts Institute of Technology 3122**  
A search for Earth-crossing asteroids

Period	Obligations	
09/01/81-03/31/84	FY83: \$95,000	TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Staff, L. G.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Brinton, H. C.	

**NAGW 332 Massachusetts Institute of Technology 3123**  
Geophysical interpretation of Venus gravity data

Period	Obligations	
05/01/82-04/30/83	FY83:	TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Reasenberg, R. D.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/Taylor, L. A.	

**NAGW 373 Massachusetts Institute of Technology 3124**  
Analysis of Jovian decametric data; Study of radio emission mechanism

Period	Obligations	
09/15/82-12/31/83	FY83: \$35,000	TOTAL: \$35,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Staelin, D. H.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Brinton, H. C.	

**NAGW 375 Massachusetts Institute of Technology 3125**  
Theoretical studies of suprathermal electrons in the extended solar corona

Period	Obligations	
11/01/82-10/31/83	FY83: \$48,033	TOTAL: \$48,033
Prin. Invest.	NASA Tech. Officer	CASE Category
Olbert, S.	HQ-EZ/Chipman, E. G.	13-Physics

**NAGW 403 Massachusetts Institute of Technology 3126**  
Surface active elements in glasses

Period	Obligations	
10/01/82-09/30/83	FY83: \$98,995	TOTAL: \$98,995
Prin. Invest.	NASA Tech. Officer	CASE Category
Tuller, H. L.	HQ-EN/Gordon, P. G.	47-Materials Engr
	Uhlmann, D. R.	

**NAGW 433 Massachusetts Institute of Technology 3127**  
Venus surface composition as inferred from radar measurements

Period	Obligations	
02/15/83-02/14/84	FY83: \$49,890	TOTAL: \$49,890
Prin. Invest.	NASA Tech. Officer	CASE Category
Pattengill, G. H.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

**NAGW 442 Massachusetts Institute of Technology 3128**  
Investigations in X-ray astronomy based on analysis of data from the SAS-3 archive

Period	Obligations	
04/01/83-03/31/84	FY83: \$200,000	TOTAL: \$200,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, G. W.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Opp, A. G.	

**NAGW 448 Massachusetts Institute of Technology 3129**  
A research program in advanced information systems

Period	Obligations	
06/01/83-05/31/84	FY83: \$410,320	TOTAL: \$410,320
Prin. Invest.	NASA Tech. Officer	CASE Category
Vandervelde, W. E.	HQ-RT/Larsen, R. L.	22-Computer Science
Deyst, J. J.	HQ-RT/Holcomb, L. B.	

**NAGW 463 Massachusetts Institute of Technology 3130**  
Studies of the effects of the winds on tropical oceans

Period	Obligations	
03/01/83-02/28/84	FY83: \$75,000	TOTAL: \$75,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Cane, M. A.	HQ-EE/McGoldrick, L. F.	33-Oceanography
	HQ-EE/Wilson, W. S.	

**NAGW 474 Massachusetts Institute of Technology 3131**  
Interpretation of NIMBUS-7 and SAGE-1 aerosol and trace gas data using three-dimensional models

Period	Obligations	
04/01/83-03/31/84	FY83: \$94,306	TOTAL: \$94,306
Prin. Invest.	NASA Tech. Officer	CASE Category
Prinn, R. G.	HQ-EE/Watson, R. T.	31-Atmos Sci
	HQ-EE/Chandra, S.	

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**NAS 2-9473 Massachusetts Institute of Technology 3132**  
Pioneer Venus data analysis of the radar altimeter experiment  
*Period* *Obligations*  
01/20/77-09/30/84 FY83: \$32,920 TOTAL: \$732,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pettingill, G. H. ARC/Fimmel, R. O. 11-Astronomy  
ARC/Dyer, J. W.

**NAS 2-9483 Massachusetts Institute of Technology 3133**  
Pioneer Venus data analysis of the orbiting celestial mechanics (OCM) experiment  
*Period* *Obligations*  
02/17/78-11/30/82 FY83: TOTAL: \$498,036  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shapiro, I. I. ARC/Fimmel, R. O. 11-Astronomy

**NAS 2-10720 Massachusetts Institute of Technology 3134**  
Air traffic control simulation study  
*Period* *Obligations*  
05/01/80-12/31/81 FY83: TOTAL: \$70,779  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Simpson, R. W. ARC/Nagel, D. C. 41-Aero Engr  
Odoni, A. R.

**NAS 2-11232 Massachusetts Institute of Technology 3135**  
Develop software for air traffic control simulator  
*Period* *Obligations*  
04/22/82-04/30/83 FY83: TOTAL: \$143,823  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Simpson, R. ARC/Nagel, D. C. 29-Math/Cmputer, NEC  
Elias, A.  
Pararas, E.

**NAS 5-22929 Massachusetts Institute of Technology 3136**  
Nimbus-G scanning multichannel microwave radiometer sensor  
*Period* *Obligations*  
01/28/76-04/30/84 FY83: \$10,000 TOTAL: \$242,843  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Staelin, D. H. GSFC/Hwang, P. H. 41-Aero Engr  
Rosenkrang, P. W.

**NAS 5-24441 Massachusetts Institute of Technology 3137**  
Reduction and analysis of data from MIT X-ray observatory on-board SAS-3 spacecraft  
*Period* *Obligations*  
10/01/78-09/30/83 FY83: TOTAL: \$3,651,604  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Clark, G. W. GSFC/Bullock, G. 11-Astronomy

**NAS 5-24493 Massachusetts Institute of Technology 3138**  
Design studies for far infrared absolute spectrophotometer for the Cosmic Background Explorer satellite  
*Period* *Obligations*  
03/01/78-07/31/83 FY83: \$39,312 TOTAL: \$462,933  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Weiss, R. G. GSFC/Mather, J. C. 11-Astronomy  
GSFC/Donohoe, M. J.

**NAS 5-25790 Massachusetts Institute of Technology 3139**  
Interplanetary monitoring platform-J/plasma experiment-data reduction and analysis  
*Period* *Obligations*  
11/01/79-12/15/84 FY83: \$62,000 TOTAL: \$302,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bridge, H. S. GSFC/Wales, R. O. 11-Astronomy

**NAS 5-25833 Massachusetts Institute of Technology 3140**  
Validation intercompanion, and use of laser ranging and radio interferometric data for the determination of geophysical parameters  
*Period* *Obligations*  
01/15/80-10/14/83 FY83: TOTAL: \$314,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shapiro, I. I. GSFC/Stephanides, C. 19-Phys Sci, NEC

**NAS 5-26861 Massachusetts Institute of Technology 3141**  
Passive microwave snowpack experiment  
*Period* *Obligations*  
01/18/82-01/18/84 FY83: TOTAL: \$23,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kong, J. A. GSFC/Shiue, J. C. 32-Geological Sci

**NAS 5-27230 Massachusetts Institute of Technology 3142**  
VLBI determination and interpretation of relative motions within a network of sites in North America and Europe  
*Period* *Obligations*  
07/01/82-07/01/84 FY83: TOTAL: \$114,037  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shapiro, I. I. GSFC/Mead, G. D. 32-Geological Sci  
Counselman, C. C., III

**NAS 5-27261 Massachusetts Institute of Technology 3143**  
Conduct a design modification study of the plasma science experiment for adaptability IPL spacecraft  
*Period* *Obligations*  
06/01/82-04/30/84 FY83: \$50,600 TOTAL: \$78,752  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lazarus, A. J. GSFC/Ogilvie, K. W. 13-Physics

**NAS 5-27339 Massachusetts Institute of Technology 3144**  
The interpretation of crustal dynamics data in terms of plate motion and regional deformation near plate boundaries  
*Period* *Obligations*  
09/22/82-09/22/84 FY83: \$20,000 TOTAL: \$70,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Solomon, S. C. GSFC/Mead, G. D. 32-Geological Sci  
Toksoz, N.

**NAS 5-27575 Massachusetts Institute of Technology 3145**  
X-ray timing Explorer experiment study experiment  
*Period* *Obligations*  
06/01/83-11/30/83 FY83: \$60,000 TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bradt, H. V. GSFC/Hibbard, W. D. 42-Astro Engr  
Jernigan, J. G.

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**NAS 5-27591 Massachusetts Institute of Technology 3146**  
Cosmic Background Explorer (COBE) pre-launch science data and post-launch data analysis

Period	Obligations	
08/01/83-12/31/89	FY83: \$33,000	TOTAL: \$33,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Weiss, R.	GSFC/Mather, J.	13-Physics

**NAS 8-27972 Massachusetts Institute of Technology 3147**  
Design, development, and operations of the AXR-2 integrated modulation collimator experiment under the HEAO program

Period	Obligations	
06/23/72-09/30/84	FY83: \$99,446	TOTAL: \$2,318,923
Prin. Invest.	NASA Tech. Officer	CASE Category
Bradt, H. V.	MSFC/Stone, J. F.	11-Astronomy

**NAS 8-27975 Massachusetts Institute of Technology 3148**  
Design and development of the AGR-5 high energy X-ray experiment under the HEAO program

Period	Obligations	
06/23/72-09/30/84	FY83: \$102,071	TOTAL: \$3,496,695
Prin. Invest.	NASA Tech. Officer	CASE Category
Keith, T. G.	LERC/Corrigan, R. D.	11-Astronomy
Little, R. R.		

**NAS 8-30752 Massachusetts Institute of Technology 3149**  
Design, development and operations of the HEAO mission B telescope experiment

Period	Obligations	
06/01/74-09/30/84	FY83: \$420,580	TOTAL: \$4,313,580
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, G. W.	MSFC/Stone, J. F.	11-Astronomy

**NAS 8-34381 Massachusetts Institute of Technology 3150**  
Space applications of automations, robotics and machine intelligence systems (ARAMIS)

Period	Obligations	
06/10/81-06/09/83	FY83: \$25,000	TOTAL: \$259,522
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, R. H.	MSFC/Vontiesenhausen, G. F.	
Minsky, M. L.		46-Mech Engr

**NAS 8-34545 Massachusetts Institute of Technology 3151**  
Study for the participation in the science and mission design of a large space deployable shuttle based antenna for space VLBI mission

Period	Obligations	
07/13/81-07/12/84	FY83: \$100,000	TOTAL: \$229,137
Prin. Invest.	NASA Tech. Officer	CASE Category
Burke, B. F.	GSFC/Morgan, S. H.	11-Astronomy

**NAS 8-34959 Massachusetts Institute of Technology 3152**  
Experiment design for structural assembly demonstration experiment

Period	Obligations	
10/18/82-10/17/83	FY83: \$90,000	TOTAL: \$90,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Akin, D. L.	MSFC/Stokes, J. W.	42-Astro Engr
	MSFC/Hypes, M. C.	

**NAS 8-35018 Massachusetts Institute of Technology 3153**  
Turbine blade-tip seal clearance excitation forces

Period	Obligations	
06/03/83-08/30/84	FY83: \$56,352	TOTAL: \$56,352
Prin. Invest.	NASA Tech. Officer	CASE Category
Sanchez, M. M.	MSFC/Gross, L. A.	46-Mech Engr
Greitzer, E. M.	MSFC/Garcia, F. F.	
Covert, E. E.		

**NAS 8-35412 Massachusetts Institute of Technology 3154**  
Fluid dynamics of crystal melts under reduced gravity

Period	Obligations	
12/03/82-12/23/84	FY83: \$80,998	TOTAL: \$80,998
Prin. Invest.	NASA Tech. Officer	CASE Category
Greenspan, H. P.	MSFC/Yates, I. C.	21-Mathematics

**NAS 9-15343 Massachusetts Institute of Technology 3155**  
Definition of Spacelab I experiment on vestibular experiments

Period	Obligations	
04/04/77-12/01/83	FY83: \$317,632	TOTAL: \$1,626,472
Prin. Invest.	NASA Tech. Officer	CASE Category
Young, L. R.	JSC/Peck, E. E.	59-Life Sci, NEC

**NAS 9-16523 Massachusetts Institute of Technology 3156**  
Vestibular experiments in Spacelab

Period	Obligations	
01/01/82-11/01/86	FY83: \$527,472	TOTAL: \$571,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Young, L. R.	JSC/Evans, J. S.	59-Life Sci, NEC

**NAS 9-16571 Massachusetts Institute of Technology 3157**  
Applied plasma physics study of plasma-gas interactions

Period	Obligations	
06/01/82-02/01/84	FY83: \$19,000	TOTAL: \$39,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Montgomery, D. B.	JSC/Chang, F.	13-Physics

**NASW 3651 Massachusetts Institute of Technology 3158**  
Vestibular experiment on the German D-1 mission

Period	Obligations	
09/01/82-11/30/85	FY83: \$382,484	TOTAL: \$631,566
Prin. Invest.	NASA Tech. Officer	CASE Category
Young, L. R.	HQ-EB/Craemer, D. B.	56-Medical Sciences
	HQ-EB/Chambers, L. P.	

**NASW 3740 Massachusetts Institute of Technology 3159**  
Welding in space

Period	Obligations	
03/24/83-09/01/83	FY83: \$18,777	TOTAL: \$18,777
Prin. Invest.	NASA Tech. Officer	CASE Category
Masubuchi, K.	HQ-MF/Holt, S. S.	47-Materials Engr
	HQ-MF/Pritchard, E. B.	

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NASW 3797 Massachusetts Institute of Technology 3160**  
Human factors of space telepresence

Period	Obligations
08/01/83-10/31/83	FY83: \$40,000 TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer CASE Category
Pendergrast, G.	HQ-RT/Monterlo, M. D.
	HQ-RT/Iver, D. M. 56-Medical Sciences

**NCA 2-425101 Massachusetts Institute of Technology 3161**  
High speed data flow computer architecture for the solution of the Navier-Stokes equation

Period	Obligations
02/01/81-04/30/82	FY83: TOTAL: \$23,757
Prin. Invest.	NASA Tech. Officer CASE Category
Dennis, J. B.	ARC/Stevens, K. G.
	22-Computer Science

**NCC 1-23 Massachusetts Institute of Technology 3162**  
Cockpit display of traffic information (CDTI) crew function assessment

Period	Obligations
07/01/79-12/31/82	FY83: TOTAL: \$134,878
Prin. Invest.	NASA Tech. Officer CASE Category
Hsieh, K. C.	LARC/Harris, R. L., Sr.
Young, L. R.	41-Aero Engr

**NCC 1-45 Massachusetts Institute of Technology 3163**  
Algorithms for computational fluid dynamics

Period	Obligations
09/01/80-05/31/82	FY83: TOTAL: \$89,747
Prin. Invest.	NASA Tech. Officer CASE Category
Abarbanel, S. S.	LARC/Dwoyer, D. L.
	LARC/Thames, F. C. 41-Aero Engr

**NCC 2-231 Massachusetts Institute of Technology 3164**  
Critical review of food processing problems

Period	Obligations
01/01/83-12/31/83	FY83: \$45,409 TOTAL: \$45,409
Prin. Invest.	NASA Tech. Officer CASE Category
Karel, M.	ARC/MacElroy, R. D.
	59-Life Sci, NEC

**NCC 3-1 Massachusetts Institute of Technology 3165**  
Molecular-orbital studies of metal-insulator interfaces

Period	Obligations
07/01/79-06/28/82	FY83: TOTAL: \$103,630
Prin. Invest.	NASA Tech. Officer CASE Category
Johnson, K. H.	LERC/Pepper, S. V.
Wallace, S.	19-Phys Sci, NEC

**NCC 3-15 Massachusetts Institute of Technology 3166**  
Methanol as a fuel extender for stationary gas turbine combustors

Period	Obligations
09/01/80-11/01/83	FY83: TOTAL: \$171,250
Prin. Invest.	NASA Tech. Officer CASE Category
Hoult, D. P.	LERC/Brabbs, T. A.
	12-Chemistry

**NCC 9-1 Massachusetts Institute of Technology 3167**  
Experiments on the etiology and time course of motion sickness

Period	Obligations
10/01/81-12/31/83	FY83: \$94,000 TOTAL: \$216,908
Prin. Invest.	NASA Tech. Officer CASE Category
Oman, C. M.	JSC/Hornick, J. L.
	56-Medical Sciences

**NGL 22-009-015 Massachusetts Institute of Technology 3168**  
Theoretical and experimental investigations of interplanetary medium and in gamma ray astronomy

Period	Obligations
01/01/63-12/01/83	FY83: \$100,000 TOTAL: \$5,136,339
Prin. Invest.	NASA Tech. Officer CASE Category
Bridge, H. S.	HQ-EE/Lynch, J. T.
	HQ-EE/Schmerling, E. R. 13-Physics

**NGL 22-009-124 Massachusetts Institute of Technology 3169**  
Control optimization stabilization and computation of algorithms for space applications

Period	Obligations
03/30/66-12/31/84	FY83: \$73,000 TOTAL: \$1,295,289
Prin. Invest.	NASA Tech. Officer CASE Category
Holt, M.	ARC/Cicolani, L. S.
Willsky, A. S.	LARC/Elliott, J. 49-Engr, NEC

**NGL 22-009-383 Massachusetts Institute of Technology 3170**  
Research in propulsion and power generation

Period	Obligations
01/16/69-08/30/85	FY83: \$108,073 TOTAL: \$1,385,360
Prin. Invest.	NASA Tech. Officer CASE Category
Covert, E. E.	LERC/Strazisar, A. J.
Thompkins, W. T.	LERC/Sanger, N. L.
Epstein, A. H.	41-Aero Engr

**NGL 22-009-521 Massachusetts Institute of Technology 3171**  
Composition and structure of planetary atmospheres

Period	Obligations
08/10/70-08/31/83	FY83: TOTAL: \$977,519
Prin. Invest.	NASA Tech. Officer CASE Category
Lewis, J. S.	HQ-EL/Brinton, H. C.
	HQ-EL/Brunk, W. E. 32-Geological Sci

**NGL 22-009-638 Massachusetts Institute of Technology 3172**  
Research in space science

Period	Obligations
03/03/72-04/30/84	FY83: \$140,000 TOTAL: \$2,460,000
Prin. Invest.	NASA Tech. Officer CASE Category
Bridge, H. S.	HQ-E/Gaskins, M. A.
	HQ-EP/Devlin, J. F. 11-Astronomy

**NGL 22-009-640 Massachusetts Institute of Technology 3173**  
Joint university research program future air transportation technological needs

Period	Obligations
11/16/71-01/31/86	FY83: \$35,000 TOTAL: \$803,345
Prin. Invest.	NASA Tech. Officer CASE Category
Simpson, R. W.	LARC/Howell, W. E.
	41-Aero Engr

# **NASA'S UNIVERSITY PROGRAM** **MASSACHUSETTS (Continued)**

**NGR 22-009-005 Massachusetts Institute of Technology 3174**  
Detection and identification of organic matter by mass spectrometry

Period	Obligations
12/01/61-10/31/83	FY83: \$93,009 TOTAL: \$1,461,366
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Biemann, K.	HQ-EB/Devincenzi, D. L. 51-Biological Sci

**NGR 22-009-277 Massachusetts Institute of Technology 3175**  
The prebiotic synthesis of polynucleotides and polynucleotide-directed polypeptides

Period	Obligations
12/01/67-12/01/83	FY83: \$78,000 TOTAL: \$815,370
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Rich, A.	HQ-EB/Devincenzi, D. L. 12-Chemistry
	HQ-EB/Rambler, M.

**NGR 22-009-526 Massachusetts Institute of Technology 3176**  
Astronomy in the region between 1 mm to 0.1 mm wavelengths

Period	Obligations
09/22/70-10/31/83	FY83: \$90,000 TOTAL: \$782,627
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Weiss, R.	HQ-EZ/Bogges, N. W. 11-Astronomy
	HQ-EZ/Weiler, E. J.

**NGR 22-009-627 Massachusetts Institute of Technology 3177**  
Control of serotonin-containing neurons in the brain, by plasma tryptophan

Period	Obligations
11/01/71-12/31/82	FY83: TOTAL: \$726,184
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
DeLoatch, E. M.	ARC/Winget, C. M. 56-Medical Sciences
Bradley, T.	
Neal, W.	

**NGR 22-009-672 Massachusetts Institute of Technology 3178**  
Ground-based radar study of the Moon and planets

Period	Obligations
03/06/72-10/31/83	FY83: \$65,000 TOTAL: \$606,570
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Pettengill, G. H.	HQ-EL/Brunk, W. E. 11-Astronomy
	HQ-EL/Brinton, H. C.

**NGR 22-009-727 Massachusetts Institute of Technology 3179**  
Study in numerical modeling of atmospheric phenomena

Period	Obligations
02/01/73-01/31/84	FY83: \$174,000 TOTAL: \$1,462,663
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Stone, P. H.	GSFC/Halem, M. 31-Atmos Sci

**NGR 22-009-730 Massachusetts Institute of Technology 3180**  
X-ray astronomy experiments from sounding rockets

Period	Obligations
03/22/72-08/31/84	FY83: \$425,000 TOTAL: \$2,065,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Rappaport, S. A.	GSFC/Early, L. J. 11-Astronomy
Boughan, E.	GSFC/Pless, R. H.
Levine, A.	

**NGT 22-009-900 Massachusetts Institute of Technology 3181**  
Visiting assistant professor program

Period	Obligations
04/01/80-09/30/83	FY83: TOTAL: \$190,197
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Harrison, D. E.	HQ-EB/McGoldrick, L. F.
Loreng, E. N.	HQ-EB/Wilson, W. S. 33-Oceanography

**NGT 22-009-901 Massachusetts Institute of Technology 3182**  
Training program in computational fluid dynamics

Period	Obligations
01/01/81-12/31/83	FY83: \$102,177 TOTAL: \$277,177
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Murman, E. M.	HQ-RT/Graves, R. A., Jr. 41-Aero Engr

**NGT 22-009-902 Massachusetts Institute of Technology 3183**  
Graduate student researchers program

Period	Obligations
06/01/81-05/31/84	FY83: \$15,000 TOTAL: \$32,121
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Lewin, W.	HQ-LB/Owens, F. C. 13-Physics

**NSG 1323 Massachusetts Institute of Technology 3184**  
Research in algebraic manipulation

Period	Obligations
07/01/76-06/30/83	FY83: TOTAL: \$228,984
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Moses, J.	LARC/Shoosmith, J. N. 22-Computer Science

**NSG 1502 Massachusetts Institute of Technology 3185**  
Closed-loop roll control for magnetic balance systems

Period	Obligations
02/01/78-01/31/82	FY83: TOTAL: \$358,841
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Covert, E. E.	LARC/Boyden, R. P. 41-Aero Engr
Haldeman, C. W.	LARC/Kilgore, R. A.

**NSG 1553 Massachusetts Institute of Technology 3186**  
Relationships between quadratic weights and linear quadratic regulator properties

Period	Obligations
09/01/78-03/31/84	FY83: TOTAL: \$48,712
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Stein, G.	LARC/Armstrong, E. S. 45-Elec Engr
Athans, M.	

**NSG 1583 Massachusetts Institute of Technology 3187**  
Research on helicopter rotor harmonic noise and broadband noise

Period	Obligations
12/01/78-11/30/83	FY83: \$110,093 TOTAL: \$356,107
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Harris, W. L.	LARC/Brooks, T. F. 13-Physics
	LARC/Farassat, F.



# **NASA'S UNIVERSITY PROGRAM** **MASSACHUSETTS (Continued)**

**NSG 2010 Massachusetts Institute of Technology 3188**  
Study of impact on Space Shuttle on stratospheric ozone

Period	Obligations
03/01/74-01/31/84	FY83: \$252,000 TOTAL: \$2,090,260
Prin. Invest.	NASA Tech. Officer
Prinn, R. G.	ARC/Whitten, R. C.
Alyea, F. N.	CASE Category 31-Atmos Sci

**NSG 2142 Massachusetts Institute of Technology 3189**  
Helicopter rotor noise

Period	Obligations
07/01/76-09/30/83	FY83: TOTAL: \$321,496
Prin. Invest.	NASA Tech. Officer
Widnall, S. E.	ARC/Johnson, W. R.
	CASE Category 41-Aero Engr

**NSG 2266 Massachusetts Institute of Technology 3190**  
An investigation of advanced helicopter rotors having individual-blade-control

Period	Obligations
11/01/77-10/31/83	FY83: \$130,021 TOTAL: \$659,767
Prin. Invest.	NASA Tech. Officer
Ham, N. D.	ARC/Johnson, W. R.
	CASE Category 41-Aero Engr
	ARC/Warmbrodt, W. G.

**NSG 2342 Massachusetts Institute of Technology 3191**  
Opportunity observations of occultations and eclipses

Period	Obligations
11/01/78-10/31/84	FY83: \$70,000 TOTAL: \$254,102
Prin. Invest.	NASA Tech. Officer
Elliot, J. L.	ARC/Haughney, L. C.
	CASE Category 11-Astronomy

**NSG 2403 Massachusetts Institute of Technology 3192**  
Development of a prototype experiment for treating wastes to nutrients for plant growth

Period	Obligations
09/01/79-06/30/83	FY83: TOTAL: \$475,000
Prin. Invest.	NASA Tech. Officer
Modell, M.	ARC/Wydeven, T.
	CASE Category 59-Life Sci, NEC
	ARC/Quattrone, P. D.

**NSG 3017 Massachusetts Institute of Technology 3193**  
Silicon surface phenomena related to energy conversion

Period	Obligations
05/01/74-02/18/84	FY83: \$80,000 TOTAL: \$475,100
Prin. Invest.	NASA Tech. Officer
Gatos, H. C.	LERC/Weinberg, I.
	CASE Category 47-Materials Engr

**NSG 3079 Massachusetts Institute of Technology 3194**  
Development of techniques for turbomachinery flutter clearance

Period	Obligations
07/15/75-11/29/83	FY83: \$44,409 TOTAL: \$422,848
Prin. Invest.	NASA Tech. Officer
Crawley, E. F.	LERC/Adamczyk, J. J.
	CASE Category 41-Aero Engr

**NSG 3208 Massachusetts Institute of Technology 3195**  
Strut induced aerodynamic forging functions

Period	Obligations
07/05/78-10/28/83	FY83: TOTAL: \$219,903
Prin. Invest.	NASA Tech. Officer
Greitzer, E. M.	LERC/Adamczyk, J. J.
	CASE Category 41-Aero Engr

**NSG 3210 Massachusetts Institute of Technology 3196**  
Wave propagation in fiber composites relating to acoustic-ultrasonic NDE techniques

Period	Obligations
08/01/78-12/29/82	FY83: TOTAL: \$139,905
Prin. Invest.	NASA Tech. Officer
Williams, J. H., Jr.	LERC/Vary, A.
	CASE Category 47-Materials Engr

**NSG 3286 Massachusetts Institute of Technology 3197**  
Viscous flow and crystallization behavior of hydrocarbon mixtures

Period	Obligations
08/02/79-08/28/83	FY83: TOTAL: \$216,693
Prin. Invest.	NASA Tech. Officer
Uhlmann, D. R.	LERC/Antoine, A. C.
	CASE Category 12-Chemistry

**NSG 3303 Massachusetts Institute of Technology 3198**  
Development of a methodology for horizontal axis wind turbine dynamic analysis

Period	Obligations
08/15/79-08/12/82	FY83: TOTAL: \$205,433
Prin. Invest.	NASA Tech. Officer
Dugundji, J.	LERC/Janetzke, D. C.
	CASE Category 41-Aero Engr
	LERC/Spera, D. A.

**NSG 5113 Massachusetts Institute of Technology 3199**  
Research in stratospheric dynamics

Period	Obligations
07/01/76-06/30/84	FY83: \$82,600 TOTAL: \$510,303
Prin. Invest.	NASA Tech. Officer
Stone, P. H.	GSFC/Rind, D.
	CASE Category 31-Atmos Sci

**NSG 5166 Massachusetts Institute of Technology 3200**  
Theoretical and numerical study of climate and climate change

Period	Obligations
03/21/77-07/31/83	FY83: TOTAL: \$243,986
Prin. Invest.	NASA Tech. Officer
Charney, J. G.	GSFC/Halem, M.
Stone, P. H.	CASE Category 31-Atmos Sci

**NSG 7081 Massachusetts Institute of Technology 3201**  
Models of the composition, structure and evolution of the lunar interior

Period	Obligations
06/01/74-02/28/84	FY83: \$100,000 TOTAL: \$1,414,960
Prin. Invest.	NASA Tech. Officer
Solomon, S. C.	HQ-EL/Quaide, W. L.
	CASE Category 32-Geological Sci
	HQ-EL/French, B. M.

**NSG 7186 Massachusetts Institute of Technology 3202**  
An observatory search for and study of new IR sources reported in the AFCRL catalogue

Period	Obligations
12/01/75-01/31/83	FY83: TOTAL: \$154,414
Prin. Invest.	NASA Tech. Officer
Kleinmann, S.	HQ-EZ/Boggess, N. W.
	CASE Category 11-Astronomy

# **NASA'S UNIVERSITY PROGRAM** **MASSACHUSETTS (Continued)**

**NSG 7297**      **Massachusetts Institute of Technology 3203**  
Studies of stress history of terrestrial lithospheres

Period	Obligations	
01/01/77-01/31/84	FY83: \$40,100	TOTAL: \$251,685
Prin. Invest.	NASA Tech. Officer	CASE Category
Solomon, S. C.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NSG 7331**      **Massachusetts Institute of Technology 3204**  
Crystal growth of device quality gallium arsenite in space

Period	Obligations	
04/01/79-04/30/86	FY83: \$300,000	TOTAL: \$2,620,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Gatos, H. C.	HQ-EL/Tuyahov, A. J.	19-Phys Sci, NEC

**NSG 7339**      **Massachusetts Institute of Technology 3205**  
X-ray balloon observations from the Northern and Southern Hemispheres

Period	Obligations	
04/01/77-11/30/83	FY83: \$236,000	TOTAL: \$881,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ricker, G. R.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Opp, A. G.	

**NSG 7526**      **Massachusetts Institute of Technology 3206**  
Portable high-speed photometry systems for observing occultations

Period	Obligations	
01/01/79-12/31/83	FY83: \$52,000	TOTAL: \$257,118
Prin. Invest.	NASA Tech. Officer	CASE Category
Elliot, J. L.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Brinton, H. C.	

**NSG 7556**      **Massachusetts Institute of Technology 3207**  
Viking radio science data analysis and synthesis

Period	Obligations	
03/01/79-12/31/82	FY83:	TOTAL: \$482,450
Prin. Invest.	NASA Tech. Officer	CASE Category
Shapiro, I. I.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Brinton, H. C.	

**NSG 7604**      **Massachusetts Institute of Technology 3208**  
Electronic spectra of heated lunar materials: Quantifying remote sensed spectra of hot planetary surfaces

Period	Obligations	
05/01/79-01/31/84	FY83: \$90,010	TOTAL: \$417,477
Prin. Invest.	NASA Tech. Officer	CASE Category
Burns, R. G.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

**NSG 7638**      **Massachusetts Institute of Technology 3209**  
Mars orbiter and comet mission

Period	Obligations	
04/15/79-10/31/83	FY83: \$50,000	TOTAL: \$580,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Binsack, J. H.	HQ-EL/Ando, K.	31-Atmos Sci
McCord, T. B.		

**NSG 7643**      **Massachusetts Institute of Technology 3210**  
Experimental and theoretical investigations in high energy astrophysics

Period	Obligations	
01/01/79-01/31/84	FY83: \$185,000	TOTAL: \$634,666
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, G. W.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Opp, A. G.	

**NSG 7645**      **Massachusetts Institute of Technology 3211**  
Materials processing research base

Period	Obligations	
10/01/79-09/30/85	FY83: \$815,000	TOTAL: \$3,091,378
Prin. Invest.	NASA Tech. Officer	CASE Category
Flemings, M. C.	HQ-EM/Testardi, L. R.	47-Materials Engr

**NAG 1-386**      **Northeastern University 3212**  
Vibration control design challenges of large space systems

Period	Obligations	
08/01/83-03/31/84	FY83: \$70,000	TOTAL: \$70,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Lin, J. G.	LARC/Joshi, S. M.	45-Elec Engr
	LARC/Armstrong, E. S.	

**NAG 2-51**      **Tufts University 3213**  
The human factors of avionic computers

Period	Obligations	
09/01/80-10/31/83	FY83: \$24,566	TOTAL: \$97,933
Prin. Invest.	NASA Tech. Officer	CASE Category
Chechile, R. A.	ARC/Palmer, E. A.	69-Psych, NEC

**NAG 9-25**      **Tufts University 3214**  
Control of bone remodeling by applied dynamic loads

Period	Obligations	
09/01/82-02/29/84	FY83:	TOTAL: \$94,650
Prin. Invest.	NASA Tech. Officer	CASE Category
Lanyon, L.	JSC/Trevino, N. C.	56-Medical Sciences

**NCA 2-785201**      **Tufts University 3215**  
Models of protein dynamics

Period	Obligations	
06/01/82-05/31/84	FY83:	TOTAL: \$12,505
Prin. Invest.	NASA Tech. Officer	CASE Category
Weaver, D.	ARC/MacElroy, R. D.	51-Biological Sci

**NCC 2-93**      **Tufts University 3216**  
Simulator fidelity and numerosity effects in CDTI experimentation

Period	Obligations	
09/01/80-10/31/82	FY83:	TOTAL: \$191,135
Prin. Invest.	NASA Tech. Officer	CASE Category
Kreifeldt, J. G.	ARC/Hart, S. G.	99-Multi-Discip

**NAG 1-54**      **University of Massachusetts - Amherst 3217**  
Remote sensing of ocean surface and ice conditions using microwaves

Period	Obligations	
09/01/80-02/28/83	FY83:	TOTAL: \$115,568
Prin. Invest.	NASA Tech. Officer	CASE Category
McIntosh, R. E.	LARC/Johnson, J. M.	45-Elec Engr

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NAG 1-115 University of Massachusetts - Amherst 3218**  
Tools supporting pre-implementation development of flight control software

Period	Obligations
01/01/81-02/28/83	FY83: TOTAL: \$134,721
Prin. Invest.	NASA Tech. Officer CASE Category
Wileden, J. C.	LARC/Senn, E. H. 22-Computer Science
Clarke, L. A.	LARC/Voigt, S. J.

**NAG 1-163 University of Massachusetts - Amherst 3219**  
Analysis of microstrip antennas

Period	Obligations
06/01/81-06/30/84	FY83: \$12,615 TOTAL: \$34,077
Prin. Invest.	NASA Tech. Officer CASE Category
Pozar, D. M.	LARC/Bailey, M. C. 45-Elec Engr
Schaubert, D. H.	

**NAG 1-279 University of Massachusetts - Amherst 3220**  
Near millimeter wave imaging/multi-beam integrated antennas

Period	Obligations
06/01/82-09/30/83	FY83: \$24,999 TOTAL: \$74,889
Prin. Invest.	NASA Tech. Officer CASE Category
Yngvesson, K. S.	LARC/Kendall, B. M. 45-Elec Engr
Schaubert, D. H.	
Pozar, D. M.	

**NAG 2-138 University of Massachusetts - Amherst 3221**  
Pioneer Venus program extended mission

Period	Obligations
10/01/81-09/30/83	FY83: TOTAL: \$24,000
Prin. Invest.	NASA Tech. Officer CASE Category
McGill, G. E.	ARC/Fimmel, R. O. 19-Phys Sci, NEC

**NAGW 40 University of Massachusetts - Amherst 3222**  
Mars: Mineralogy of the surface materials

Period	Obligations
01/01/80-06/30/83	FY83: TOTAL: \$168,862
Prin. Invest.	NASA Tech. Officer CASE Category
Huguenin, R. L.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/Boyce, J. M.

**NAGW 276 University of Massachusetts - Amherst 3223**  
The mapping of ocean surface currents using dual-frequency microwave radars

Period	Obligations
01/01/82-12/31/83	FY83: \$76,380 TOTAL: \$150,704
Prin. Invest.	NASA Tech. Officer CASE Category
McIntosh, R. E.	HQ-EE/McGoldrick, L. F.
	HQ-EE/Wilson, W. S. 33-Oceanography

**NAGW 287 University of Massachusetts - Amherst 3224**  
Microwave remote sensing measurements

Period	Obligations
01/01/82-10/01/83	FY83: \$93,791 TOTAL: \$227,417
Prin. Invest.	NASA Tech. Officer CASE Category
Swift, C. T.	HQ-EE/McGoldrick, L. F.
	HQ-EE/Wilson, W. S. 33-Oceanography

**NAGW 436 University of Massachusetts - Amherst 3225**  
Boundary conditions for the paleoenvironment: Chemical and physical processes in the pre-solar nebula

Period	Obligations
02/15/83-02/14/84	FY83: \$29,906 TOTAL: \$29,906
Prin. Invest.	NASA Tech. Officer CASE Category
Pattengill, G. H.	HQ-EL/Quaide, W. L. 32-Geological Sci
Schloerb, F. P.	HQ-EL/French, B. M.

**NAGW 440 University of Massachusetts - Amherst 3226**  
Formation and remote detection of weathering products on low-temperature solar system objects

Period	Obligations
03/15/83-03/14/84	FY83: \$45,000 TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer CASE Category
Hugrienin, R. L.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NAS 5-26414 University of Massachusetts - Amherst 3227**  
Scientific investigation of the mineralogy of magnetic anomalies

Period	Obligations
12/24/80-07/23/83	FY83: TOTAL: \$39,500
Prin. Invest.	NASA Tech. Officer CASE Category
Haggerty, S. E.	GSFC/Oseroff, H. 32-Geological Sci

**NAS 5-27542 University of Massachusetts - Amherst 3228**  
Application of remote sensing to the management of natural resources in Massachusetts

Period	Obligations
01/25/83-01/24/84	FY83: \$15,515 TOTAL: \$15,515
Prin. Invest.	NASA Tech. Officer CASE Category
Finn, J. T.	GSFC/Blodgett, H. W. 39-Env Sci, NEC
	GSFC/Kerber, A. G.

**NGL 22-010-023 University of Massachusetts - Amherst 3229**  
Theoretical studies of diffuse reflection and transmission of radiation in planetary atmospheres

Period	Obligations
05/24/67-09/30/83	FY83: TOTAL: \$694,615
Prin. Invest.	NASA Tech. Officer CASE Category
Irvine, W. M.	HQ-EL/Brunk, W. E. 11-Astronomy
	HQ-EL/Brinton, H. C.

**NGR 22-010-076 University of Massachusetts - Amherst 3230**  
Reconnaissance study of large geologic ring structures on Mars

Period	Obligations
05/19/70-03/31/84	FY83: \$34,996 TOTAL: \$422,177
Prin. Invest.	NASA Tech. Officer CASE Category
McGill, G. E.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NGT 22-010-800 University of Massachusetts - Amherst 3231**  
NASA graduate student researchers program

Period	Obligations
04/15/83-04/14/84	FY83: \$14,120 TOTAL: \$14,120
Prin. Invest.	NASA Tech. Officer CASE Category
Finn, J. T.	HQ-LB/Owens, F. C. 39-Env Sci, NEC

# **NASA'S UNIVERSITY PROGRAM MASSACHUSETTS (Continued)**

**NSG 7397 University of Massachusetts - Amherst 3232**  
Surface chemistry and the search for life on Mars

Period	Obligations
10/01/77-02/28/83	FY83: TOTAL: \$202,993
Prin. Invest. Huguenin, R. L.	NASA Tech. Officer HQ-EB/Devincenzi, D. L. CASE Category 12-Chemistry

**NSG 7405 University of Massachusetts - Amherst 3233**  
Mineralogy and weathering processes on Mars

Period	Obligations
10/01/77-01/31/84	FY83: \$34,999 TOTAL: \$210,684
Prin. Invest. Huguenin, R. L.	NASA Tech. Officer HQ-EL/Boyce, J. M. CASE Category 32-Geological Sci HQ-EL/Holt, H. E.

**NSG 7549 University of Massachusetts - Amherst 3234**  
The opaque mineral chemistry of allende, basaltic achondrites, and the Antarctic meteorite suite

Period	Obligations
05/01/79-01/31/82	FY83: TOTAL: \$139,682
Prin. Invest. Haggerty, S. E.	NASA Tech. Officer HQ-EL/French, B. M. CASE Category 32-Geological Sci HQ-EL/Quaide, W. L.

**NSG 9069 University of Massachusetts - Amherst 3235**  
Comparative geochemical and petrological study of lunar and terrestrial basaltic volcanism

Period	Obligations
05/15/78-01/31/84	FY83: \$20,000 TOTAL: \$139,791
Prin. Invest. Rhodes, J. M.	NASA Tech. Officer JSC/Dietrich, J. W. CASE Category 32-Geological Sci

**NSG 5376 Wheaton College 3236**  
Ultraviolet spectrophotometry of planetary nebulae

Period	Obligations
07/01/79-05/31/84	FY83: \$10,100 TOTAL: \$21,316
Prin. Invest. Barker, T.	NASA Tech. Officer GSFC/Kondo, Y. CASE Category 11-Astronomy

**NAG 1-91 Woods Hole Oceanographic Institution 3237**  
Acoustic profiling of ocean currents

Period	Obligations
07/15/80-05/14/82	FY83: TOTAL: \$298,065
Prin. Invest. Joyce, T. M.	NASA Tech. Officer LARC/Allario, F. CASE Category 33-Oceanography

**NAG 2-91 Woods Hole Oceanographic Institution 3238**  
Gravity, topography and crustal evolution of Venus

Period	Obligations
01/01/81-12/31/81	FY83: TOTAL: \$25,000
Prin. Invest. Bowin, C. O.	NASA Tech. Officer ARC/Fimmel, R. O. CASE Category 32-Geological Sci

**NAG 5-185 Woods Hole Oceanographic Institution 3239**  
Warm water mass formation

Period	Obligations
05/15/81-02/14/83	FY83: TOTAL: \$88,165
Prin. Invest. Gaddy, G. T.	NASA Tech. Officer GSFC/Rao, D. B. CASE Category 32-Geological Sci

**NAG 5-281 Woods Hole Oceanographic Institution 3240**  
Satellite-linked ocean observing system rving system

Period	Obligations
10/01/82-12/31/83	FY83: \$600,000 TOTAL: \$600,000
Prin. Invest. Chase, R. P. Walden, R. G. Webb, D. C.	NASA Tech. Officer GSFC/Kirk, R. G. CASE Category 33-Oceanography

**NAG 5-321 Woods Hole Oceanographic Institution 3241**  
Correlations with geoid anomalies

Period	Obligations
05/15/83-05/14/84	FY83: \$20,000 TOTAL: \$20,000
Prin. Invest. Bowin, C. O.	NASA Tech. Officer GSFC/Kouns, C. W. CASE Category 32-Geological Sci GSFC/Frey, H. V.

**NAGW 241 Woods Hole Oceanographic Institution 3242**  
Support for the development and coordination of remote sensing activities

Period	Obligations
08/01/81-01/31/83	FY83: TOTAL: \$115,630
Prin. Invest. Spencer, D. W.	NASA Tech. Officer HQ-EB/McGoldrick, L. F. CASE Category HQ-EB/Wilson, W. S. 39-Env Sci, NEC

**NAGW 265 Woods Hole Oceanographic Institution 3243**  
System and engineering design of the relays

Period	Obligations
10/01/81-03/31/83	FY83: TOTAL: \$187,441
Prin. Invest. Chase, R. R. Walden, R. G. Webb, D. C.	NASA Tech. Officer HQ-EB/McGoldrick, L. F. CASE Category HQ-EB/Wilson, W. S. 33-Oceanography

**NAGW 272 Woods Hole Oceanographic Institution 3244**  
Research on acoustic profiling of upper ocean currents

Period	Obligations
10/15/81-11/14/83	FY83: \$218,227 TOTAL: \$507,209
Prin. Invest. Joyce, T. M.	NASA Tech. Officer HQ-EE/Gregg, W. CASE Category HQ-EE/Wilson, W. S. 33-Oceanography

**NAS 1-16606 Woods Hole Oceanographic Institution 3245**  
Study of dynamics of phytoplankton patches on Nantucket shoals

Period	Obligations
04/02/81-03/31/83	FY83: TOTAL: \$25,180
Prin. Invest. Beardsley, R. C. Limeburner, R.	NASA Tech. Officer LARC/Saias, W. E. CASE Category LARC/Hypes, W. D. 33-Oceanography

**NASW 3770 Woods Hole Oceanographic Institution 3246**  
Gravity anomaly maps of mass

Period	Obligations
05/15/83-05/14/84	FY83: \$48,599 TOTAL: \$48,599
Prin. Invest. Bowin, C. O.	NASA Tech. Officer HQ-EL/Quaide, W. L. CASE Category 11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NGT 22-014-800 Woods Hole Oceanographic Institution 3247**  
Graduate student training program in oceanographic remote sensing

Period	Obligations
06/01/81-05/31/84	FY83: \$55,000 TOTAL: \$125,917
Prin. Invest.	NASA Tech. Officer CASE Category
Hollister, C. D.	HQ-EE/Thomas, R. H. 33-Oceanography

**NAG 8-447 Worcester Polytechnic Institute 3248**  
Materials research in space: A new avenue, from innovation to production

Period	Obligations
01/03/83-01/02/84	FY83: \$9,176 TOTAL: \$9,176
Prin. Invest.	NASA Tech. Officer CASE Category
Austin, R. J.	MSFC/Vardaman, W. K. 11-Astronomy

**NCC 1-56 Worcester Polytechnic Institute 3249**  
Visual scanning and aircraft pilot behavior

Period	Obligations
11/09/81-06/30/84	FY83: \$48,034 TOTAL: \$124,491
Prin. Invest.	NASA Tech. Officer CASE Category
Tole, J. R.	LARC/Harris, R. L., Sr. 99-Multi-Discip

**MICHIGAN**

**NAG 1-221 Michigan State University 3250**  
Effects of large eddy breakup (LEBU) devices on turbulent boundary layer drag

Period	Obligations
11/01/81-10/31/82	FY83: TOTAL: \$20,755
Prin. Invest.	NASA Tech. Officer CASE Category
Falco, R. E.	LARC/Hefner, J. N. 41-Aero Engr
	LARC/Bushnell, D. M.

**NAG 1-287 Michigan State University 3251**  
Vorticity measurements in the intermittent region of a free shear layer and transfer of programs to Langley

Period	Obligations
06/15/82-05/31/83	FY83: TOTAL: \$13,667
Prin. Invest.	NASA Tech. Officer CASE Category
Foss, J. F.	LARC/Yu, J. C. 41-Aero Engr

**NAG 1-302 Michigan State University 3252**  
Effects of manipulators on turbulent boundary layer drag

Period	Obligations
11/01/82-10/31/83	FY83: \$50,000 TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer CASE Category
Falco, R. E.	LARC/Hefner, J. N. 41-Aero Engr
	LARC/Anders, J. B.

**NAG 1-367 Michigan State University 3253**  
Vorticity measurements in the shear layer of a large axisymmetric jet

Period	Obligations
05/01/83-12/31/83	FY83: \$3,000 TOTAL: \$3,000
Prin. Invest.	NASA Tech. Officer CASE Category
Foss, J. F.	LARC/Yu, J. C. 41-Aero Engr

**NAG 2-86 Michigan State University 3254**  
Vorticity measurements in a forced plane shear layer

Period	Obligations
10/01/80-12/31/83	FY83: \$51,951 TOTAL: \$153,548
Prin. Invest.	NASA Tech. Officer CASE Category
Foss, J. F.	ARC/Rubenstein, M. W. 41-Aero Engr
	ARC/Marvin, J. G.

**NAG 3-51 Michigan State University 3255**  
Experimental evaluation criteria for constitutive models of time-dependents cyclic plasticity

Period	Obligations
06/02/80-09/30/83	FY83: \$20,000 TOTAL: \$161,919
Prin. Invest.	NASA Tech. Officer CASE Category
Martin, J. F.	LERC/McGaw, M. A. 47-Materials Engr

**NAG 3-93 Michigan State University 3256**  
A miniature nanosecond spark detector for liquid chromatographic analysis of crude oils and fuels

Period	Obligations
09/15/80-03/11/85	FY83: \$60,023 TOTAL: \$162,502
Prin. Invest.	NASA Tech. Officer CASE Category
Crouch, S. R.	LERC/Seng, G. T. 12-Chemistry

**NAG 3-107 Michigan State University 3257**  
Development and application of triple quadrupole mass spectrometry for jet fuel characterization

Period	Obligations
10/13/80-04/10/85	FY83: \$89,981 TOTAL: \$258,662
Prin. Invest.	NASA Tech. Officer CASE Category
Enke, C. G.	LERC/Seng, G. T. 12-Chemistry

**NAG 3-245 Michigan State University 3258**  
Free stream turbulence and density ratio effects on the interaction region of a jet in a cross flow

Period	Obligations
12/28/81-12/26/83	FY83: \$35,950 TOTAL: \$71,335
Prin. Invest.	NASA Tech. Officer CASE Category
Foss, J. F.	LERC/Holdeman, J. D. 46-Mech Engr

**NAG 3-305 Michigan State University 3259**  
Energy conversion and transfer mechanisms in low molecular weight gases

Period	Obligations
11/16/82-11/15/83	FY83: TOTAL: \$80,000
Prin. Invest.	NASA Tech. Officer CASE Category
Asmussen, J.	LERC/Nakanishi, S. 19-Phys Sci, NEC
Hawley, M. C.	
Kerber, R. L.	

**NAG 3-399 Michigan State University 3260**  
Improved models for increasing wind penetration, economics and operating reliability in a utility

Period	Obligations
04/01/83-03/31/84	FY83: \$73,000 TOTAL: \$73,000
Prin. Invest.	NASA Tech. Officer CASE Category
Schlueter, R. A.	LERC/Gilbert, L. J. 45-Elec Engr
Park, G. L.	

**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NAG 3-453** **Michigan State University** **3261**  
 Experimental evaluation criteria for uniaxial and biaxial notch stress states at elevated temperatures  
*Period* *Obligations*  
 10/01/83-09/30/84 FY83: \$50,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Martin, J. F. LERC/McGaw, M. A. 47-Materials Engr

**NAG 5-291** **Michigan State University** **3262**  
 Investigations of circumstellar dust  
*Period* *Obligations*  
 02/01/83-01/31/84 FY83: \$4,883 TOTAL: \$4,883  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Baird, S. R. GSFC/Kondo, Y. 11-Astronomy

**NAGW 97** **Michigan State University** **3263**  
 An attempt to localize and identify the gravity sensing mechanism of plants  
*Period* *Obligations*  
 08/01/80-11/30/83 FY83: TOTAL: \$208,178  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bandurski, R. S. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAS 5-26445** **Michigan State University** **3264**  
 High data rate (multigigabit) satellite communication system study  
*Period* *Obligations*  
 01/30/81-06/30/82 FY83: TOTAL: \$37,169  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Siegel, M. GSFC/Shu, P. K. 45-Elec Engr

**NAS 5-27618** **Michigan State University** **3265**  
 Temperature and reflectance monitored from satellites as an indicator of shift and impact of vegetation change  
*Period* *Obligations*  
 05/05/83-06/04/84 FY83: \$40,000 TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bartholic, J. GSFC/Nelson, R. 55-Agriculture Sci

**NASW 3748** **Michigan State University** **3266**  
 The alpha helix concept  
*Period* *Obligations*  
 03/24/83-09/01/83 FY83: \$18,294 TOTAL: \$18,294  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bandurski, R. S. HQ-MF/Holt, S. S. 51-Biological Sci  
 HQ-MF/Pritchard, E. B.

**NCC 3-26** **Michigan State University** **3267**  
 Device-circuit interaction with GaAs IMPATT diodes  
*Period* *Obligations*  
 04/01/83-03/31/84 FY83: \$56,952 TOTAL: \$56,952  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Freeman, J. C. LERC/Chomos, G. J. 45-Elec Engr

**NGL 23-004-083** **Michigan State University** **3268**  
 Use of remote sensing for land use policy formulation  
*Period* *Obligations*  
 06/08/72-05/31/85 FY83: TOTAL: \$1,360,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Boylan, M. G. HQ-EL/Tuyahov, A. J. 39-Env Sci, NEC  
 Bartholic, J.

**NSG 3299** **Michigan State University** **3269**  
 Generation of free radicals and ions for spacecraft propulsion  
*Period* *Obligations*  
 08/15/79-11/11/83 FY83: TOTAL: \$477,198  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Asmussen, J. LERC/Nakanishi, S. 19-Phys Sci, NEC  
 Hawley, M. C.  
 Kerber, R. L.

**NSG 7293** **Michigan State University** **3270**  
 Radiative fluid dynamic studies of the Sun and compact H II regions  
*Period* *Obligations*  
 10/01/76-11/30/83 FY83: \$22,000 TOTAL: \$119,492  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Stein, R. F. HQ-EZ/Chipman, E. G. 13-Physics

**NAG 3-216** **Michigan Technological University** **3271**  
 Structure property effects of tantalum additions to nickel-base superalloys  
*Period* *Obligations*  
 10/20/81-10/18/84 FY83: TOTAL: \$197,037  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Heckel, R. W. LERC/Dreshfield, R. L. 12-Chemistry  
 Pletka, B. J.

**NAG 3-244** **Michigan Technological University** **3272**  
 Combined effects of surface oxidation and coating/substrate interdiffusion of coating performance  
*Period* *Obligations*  
 12/20/81-12/15/83 FY83: \$42,500 TOTAL: \$80,700  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Heckel, R. W. LERC/Gedwill, M. A. 47-Materials Engr

**NAG 3-326** **Michigan Technological University** **3273**  
 A dynamic analysis of rotary combustion engine seals  
*Period* *Obligations*  
 09/20/82-09/19/83 FY83: TOTAL: \$24,990  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Vilmann, C. LERC/Schock, H. J. 46-Mech Engr

**NAG 3-344** **Michigan Technological University** **3274**  
 Investigation of effect of speed of movement of dynamic loads on deflection of spur gear teeth  
*Period* *Obligations*  
 01/01/83-12/31/83 FY83: TOTAL: \$46,149  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Passerello, C. E. LERC/Coy, J. J. 46-Mech Engr

**NAG 3-456** **Michigan Technological University** **3275**  
 Deformation analysis of rotary combustion engine housings  
*Period* *Obligations*  
 09/01/83-08/31/84 FY83: \$60,030 TOTAL: \$60,030  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Vilmann, C. LERC/Lee, C. 46-Mech Engr

**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NAS 8-33727 Michigan Technological University 3276**  
 Materials processing in space experiment. The influence of gravity on the solidification of monotectic alloys  

Period	Obligations
09/01/80-08/31/83	FY83: TOTAL: \$126,523
Prin. Invest.	NASA Tech. Officer CASE Category
Hellawell, A.	MSFC/Reeves, F. A. 19-Phys Sci, NEC
	MSFC/Williams, J. R.

**NAG 3-148 Spring Arbor College 3277**  
 Chemical and electrochemical aspects of the chromic/chromous electrode reaction in the NASA-redox energy storage system  

Period	Obligations
01/10/81-05/30/83	FY83: TOTAL: \$24,000
Prin. Invest.	NASA Tech. Officer CASE Category
Johnson, D. A.	LERC/Charleson, J. A. 12-Chemistry

**NAG 1-93 University of Michigan - Ann Arbor 3278**  
 Halogen occultation experiment  

Period	Obligations
07/17/80-12/31/83	FY83: \$24,996 TOTAL: \$99,010
Prin. Invest.	NASA Tech. Officer CASE Category
Drayson, S. R.	LARC/Sullivan, E. M. 31-Atmos Sci

**NAG 1-296 University of Michigan - Ann Arbor 3279**  
 The performance and evaluation of real-time multicomputer control systems  

Period	Obligations
09/01/82-12/31/83	FY83: \$39,783 TOTAL: \$89,798
Prin. Invest.	NASA Tech. Officer CASE Category
Shin, K. G.	LARC/Butler, R. W.
Kim, B. K.	22-Computer Science
	LARC/Lupton, A. O.

**NAG 2-118 University of Michigan - Ann Arbor 3280**  
 Computer tomography of flows external to test models  

Period	Obligations
06/01/81-08/31/82	FY83: TOTAL: \$49,857
Prin. Invest.	NASA Tech. Officer CASE Category
Vest, C. M.	ARC/Lee, G. 41-Aero Engr

**NAG 2-185 University of Michigan - Ann Arbor 3281**  
 Investigations of otolith responses using ground based vestibular research facility  

Period	Obligations
07/01/82-06/30/84	FY83: \$27,000 TOTAL: \$53,418
Prin. Invest.	NASA Tech. Officer CASE Category
Anderson, D. J.	ARC/Daunton, N. 12-Chemistry

**NAG 3-185 University of Michigan - Ann Arbor 3282**  
 Research on social aspects of photovoltaic applications  

Period	Obligations
05/25/81-02/28/85	FY83: \$136,038 TOTAL: \$322,464
Prin. Invest.	NASA Tech. Officer CASE Category
Roberts, A. F.	LERC/Marsik, S. J. 79-Soc Sci, NEC
	LERC/Bifano, W. J.

**NAG 3-294 University of Michigan - Ann Arbor 3283**  
 Monte Carlo calculations of nonreacting and reacting elliptic flows  

Period	Obligations
06/10/82-06/09/83	FY83: TOTAL: \$44,132
Prin. Invest.	NASA Tech. Officer CASE Category
Radhakrishnan, K.	LERC/Claus, R. 46-Mech Engr

**NAG 3-388 University of Michigan - Ann Arbor 3284**  
 Computer analysis and design applicable to contact problems in jet engines blade-hub interface (RWT/broach optimization)  

Period	Obligations
01/30/83-01/29/84	FY83: \$74,164 TOTAL: \$74,164
Prin. Invest.	NASA Tech. Officer CASE Category
Kikuchi, N.	LERC/Hirschbein, M. S. 41-Aero Engr
Taylor, J.	LERC/Chamis, C. C.

**NAG 3-403 University of Michigan - Ann Arbor 3285**  
 Studies of two-phase heat transfer under reduced gravity  

Period	Obligations
04/01/83-12/31/83	FY83: \$26,937 TOTAL: \$26,937
Prin. Invest.	NASA Tech. Officer CASE Category
Merte, H., Jr.	LERC/Chai, A. T. 13-Physics

**NAG 3-421 University of Michigan - Ann Arbor 3286**  
 Technology survey of a/c engine liquid cooling system  

Period	Obligations
04/25/83-04/30/84	FY83: \$29,687 TOTAL: \$29,687
Prin. Invest.	NASA Tech. Officer CASE Category
Van Gunst, R. W.	LERC/Willis, E. A. 41-Aero Engr

**NAG 5-109 University of Michigan - Ann Arbor 3287**  
 Doppler line profile measurement of the Jovian lyman alpha emission  

Period	Obligations
10/01/80-09/30/82	FY83: TOTAL: \$16,276
Prin. Invest.	NASA Tech. Officer CASE Category
Atreya, S. K.	GSFC/Corrigan, J. P. 11-Astronomy

**NAG 5-230 University of Michigan - Ann Arbor 3288**  
 Intercomparison measurement between rocket-borne and balloon-borne chemiluminescent nitric oxide payloads  

Period	Obligations
04/01/82-07/31/84	FY83: \$30,066 TOTAL: \$112,876
Prin. Invest.	NASA Tech. Officer CASE Category
Horvath, J. J.	GSFC/Reed, E. I. 31-Atmos Sci
Shetter, R. E.	GSFC/Frederick, J. E.

**NAG 5-251 University of Michigan - Ann Arbor 3289**  
 Observations of a symbiotic star in eclipse and two mass transfer X-ray binaries  

Period	Obligations
08/01/82-01/31/84	FY83: TOTAL: \$1,580
Prin. Invest.	NASA Tech. Officer CASE Category
Cowley, A. P.	GSFC/Kondo, Y. 11-Astronomy
Hutchings, J. B.	

Period	Obligations	CASE Category
02/09/76-09/30/83	FY83: \$80,661	11-Astronomy
Prin. Invest.	NASA Tech. Officer	
Nagy, A. F.	ARC/Fimmel, R. O.	
	ARC/Dyer, J. W.	



**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NAS 2-10535 University of Michigan - Ann Arbor 3304**  
 Study of effects of space travel on mammalian gravity receptors

Period	Obligations
01/17/80-01/03/82	FY83: \$81,000 TOTAL: \$180,145
Prin. Invest.	NASA Tech. Officer CASE Category
Ross, M.	ARC/Ferandin, J. A. 51-Biological Sci
	ARC/Polson, P.

**NAS 2-10945 University of Michigan - Ann Arbor 3305**  
 Study of the effect of weightlessness on the development of amphibian eggs fertilized in space

Period	Obligations
04/22/81-02/28/83	FY83: \$18,645 TOTAL: \$38,237
Prin. Invest.	NASA Tech. Officer CASE Category
Nace, G. W.	ARC/Tremor, J. W. 59-Life Sci, NEC

**NAS 2-11225 University of Michigan - Ann Arbor 3306**  
 Development of VRF experiment subsystem

Period	Obligations
05/18/82-05/31/83	FY83: TOTAL: \$11,284
Prin. Invest.	NASA Tech. Officer CASE Category
Anderson, D. J.	ARC/Mah, R. W. 49-Engr, NEC

**NAS 5-11376 University of Michigan - Ann Arbor 3307**  
 Ae-C, D, and E pelz experiment

Period	Obligations
01/07/71-05/30/83	FY83: TOTAL: \$1,193,819
Prin. Invest.	NASA Tech. Officer CASE Category
Carignan, G. R.	GSFC/Hedin, A. E. 31-Atmos Sci
	GSFC/Spencer, N. W.

**NAS 5-11380 University of Michigan - Ann Arbor 3308**  
 Ae-C, D, and E neutral temperature experiment

Period	Obligations
02/03/71-03/30/83	FY83: TOTAL: \$1,201,050
Prin. Invest.	NASA Tech. Officer CASE Category
Carignan, G. R.	GSFC/Spencer, N. W. 31-Atmos Sci

**NAS 5-23006 University of Michigan - Ann Arbor 3309**  
 Atmosphere Explorer visual airglow photometer

Period	Obligations
08/24/71-06/30/83	FY83: TOTAL: \$2,171,815
Prin. Invest.	NASA Tech. Officer CASE Category
Hays, P. B.	GSFC/Bullock, G. D. 31-Atmos Sci

**NAS 5-24331 University of Michigan - Ann Arbor 3310**  
 Theoretical investigation to identify and develop specific aerodynamic studies and problems adaptable to the AE satellite

Period	Obligations
12/01/77-03/31/83	FY83: TOTAL: \$491,576
Prin. Invest.	NASA Tech. Officer CASE Category
Walker, J. C.	GSFC/Bullock, G. D. 31-Atmos Sci

**NAS 5-25002 University of Michigan - Ann Arbor 3311**  
 Wind and temperature spectrometer for the Dynamics Explorer spacecraft

Period	Obligations
03/30/78-09/30/85	FY83: \$52,322 TOTAL: \$717,674
Prin. Invest.	NASA Tech. Officer CASE Category
Carignan, G. R.	GSFC/Spencer, N. W. 31-Atmos Sci

**NAS 5-25031 University of Michigan - Ann Arbor 3312**  
 Develop, fabricate, test, and support hardware for the San Marco/wind and temperature experiment

Period	Obligations
05/05/78-09/30/84	FY83: \$95,266 TOTAL: \$864,354
Prin. Invest.	NASA Tech. Officer CASE Category
Carignan, G. R.	GSFC/Spencer, N. W. 31-Atmos Sci
Maurer, J. M.	GSFC/Adkins, R.

**NAS 5-25038 University of Michigan - Ann Arbor 3313**  
 Theory formulation and analysis support for the Dynamics Explorer spacecraft

Period	Obligations
08/22/78-09/30/84	FY83: \$104,000 TOTAL: \$266,000
Prin. Invest.	NASA Tech. Officer CASE Category
Adams, D. F.	GSFC/Bullock, G. D. 11-Astronomy
Odom, E. M.	

**NAS 5-25145 University of Michigan - Ann Arbor 3314**  
 Electronic system parts for Galileo probe neutral mass spectrometer

Period	Obligations
07/31/78-02/01/83	FY83: TOTAL: \$223,766
Prin. Invest.	NASA Tech. Officer CASE Category
Carignan, G. R.	GSFC/Nieman, H. 31-Atmos Sci
	GSFC/Way, S.

**NAS 5-25153 University of Michigan - Ann Arbor 3315**  
 Fabrication of electronic system for the Galileo probe neutral mass spectrometer

Period	Obligations
08/10/78-01/31/84	FY83: \$221,842 TOTAL: \$1,406,687
Prin. Invest.	NASA Tech. Officer CASE Category
Carignan, G. R.	GSFC/Nieman, H. 31-Atmos Sci
	GSFC/Way, S.

**NAS 5-25158 University of Michigan - Ann Arbor 3316**  
 CMOS radiation effects measurement (CREM) experiment and associated ground support equipment (GSE)

Period	Obligations
08/16/78-12/30/83	FY83: TOTAL: \$488,425
Prin. Invest.	NASA Tech. Officer CASE Category
Carignan, G. R.	GSFC/Haykin, D. 13-Physics
	GSFC/Cliff, R.

**NAS 5-25691 University of Michigan - Ann Arbor 3317**  
 Data analysis for Fabry-Perot interferometer for Dynamics Explorer project

Period	Obligations
02/10/80-11/30/83	FY83: \$269,978 TOTAL: \$596,695
Prin. Invest.	NASA Tech. Officer CASE Category
Hays, P. B.	GSFC/Bullock, G. D. 41-Aero Engr

**NAS 5-26069 University of Michigan - Ann Arbor 3318**  
 NACS experiment for Dynamics Explorer project

Period	Obligations
02/10/80-09/30/84	FY83: \$135,000 TOTAL: \$275,000
Prin. Invest.	NASA Tech. Officer CASE Category
Carignan, G. R.	GSFC/Bullock, G. D. 11-Astronomy

**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NAS 5-26169 University of Michigan - Ann Arbor 3319**  
 Definition phase of the high resolution Doppler image (HRDI) for the upper atmosphere research satellites program (UARS)  
*Period Obligations*  
 09/24/80-09/30/83 FY83: \$1,063,011 TOTAL: \$2,136,080  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hays, P. B. GSFC/Brown, W. H., Jr. 31-Atmos Sci

**NAS 5-26678 University of Michigan - Ann Arbor 3320**  
 Conduct design study for Venus orbiting image radar probe  
*Period Obligations*  
 09/04/81-12/03/82 FY83: \$498 TOTAL: \$30,498  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Nagy, A. F. GSFC/Brace, L. H. 31-Atmos Sci  
 Corrigan, G.

**NAS 5-26840 University of Michigan - Ann Arbor 3321**  
 Preliminary design of the Venus orbiting imaging radar (VOIR) wind and temperature spectrometer (WATS) instrument  
*Period Obligations*  
 01/21/82-11/20/82 FY83: TOTAL: \$30,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Carignan, G. R. GSFC/Spencer, N. 11-Astronomy

**NAS 5-27305 University of Michigan - Ann Arbor 3322**  
 Design study of advanced lang muir probe bread board  
*Period Obligations*  
 07/16/82-09/30/83 FY83: TOTAL: \$14,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Unavailable GSFC/Brace, L. H. 45-Elec Engr

**NAS 5-27751 University of Michigan - Ann Arbor 3323**  
 High resolution Doppler imager (HRDI) for UARS  
*Period Obligations*  
 10/01/83-04/01/88 FY83: \$392,013 TOTAL: \$392,013  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hays, P. GSFC/Browne, W. 31-Atmos Sci  
 GSFC/Donley, J.

**NAS 8-32661 University of Michigan - Ann Arbor 3324**  
 Spacelab outgassing  
*Period Obligations*  
 09/20/77-03/01/84 FY83: \$75,711 TOTAL: \$349,427  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Carignan, G. R. MSFC/Miller, E. R. 39-Env Sci, NEC  
 MSFC/Wills, F. D.

**NAS 8-34533 University of Michigan - Ann Arbor 3325**  
 Retarding ion mass spectrometer (RIMS) data analysis  
*Period Obligations*  
 09/02/81-03/31/84 FY83: \$19,283 TOTAL: \$37,926  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Nagy, A. F. MSFC/Fields, S. A. 13-Physics

**NAS 8-34910 University of Michigan - Ann Arbor 3326**  
 Study definition phase for thermal ion dynamics experiment for OPEN  
*Period Obligations*  
 08/26/82-10/26/83 FY83: TOTAL: \$28,124  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Sharp, W. E. MSFC/Chappell, R. 11-Astronomy

**NAS 9-15244 University of Michigan - Ann Arbor 3327**  
 Evaluations of postural mechanisms under dynamic conditions  
*Period Obligations*  
 02/01/77-09/01/84 FY83: \$95,000 TOTAL: \$360,069  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Anderson, D. J. JSC/Homick, J. L. 56-Medical Sciences

**NAS 9-15375 University of Michigan - Ann Arbor 3328**  
 Definition of Spacelab I experiment for adaptation of vestibulo-spinal reflex mechanisms during space flight  
*Period Obligations*  
 06/01/77-12/01/83 FY83: \$17,500 TOTAL: \$276,345  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Anderson, D. J. JSC/Reschke, M. F. 51-Biological Sci

**NCA 2-440301 University of Michigan - Ann Arbor 3329**  
 Evaluating head-up display data: Eye focus versus decision time (joint research interchange)  
*Period Obligations*  
 06/01/83-05/31/84 FY83: \$19,246 TOTAL: \$19,246  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Weintraub, D. J. ARC/Haines, R. F. 61-Biol Aspects

**NCA 2-440302 University of Michigan - Ann Arbor 3330**  
 Silicon microvalve technology for micromachined integrated sensors  
*Period Obligations*  
 09/01/83-08/31/85 FY83: \$24,779 TOTAL: \$24,779  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wise, D. ARC/Carle, G. C. 31-Atmos Sci

**NCC 1-76 University of Michigan - Ann Arbor 3331**  
 Application of satellite radiation budget measurements to study climate processes of the Earth  
*Period Obligations*  
 01/01/83-12/31/84 FY83: \$50,000 TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bartman, F. L. LARC/Smith, G. L. 31-Atmos Sci  
 LARC/Costen, R. C.

**NCC 2-201 University of Michigan - Ann Arbor 3332**  
 Microprocessor studies in computational chemistry  
*Period Obligations*  
 08/01/82-09/30/83 FY83: \$6,436 TOTAL: \$43,447  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Calahan, D. A. ARC/Arnold, J. O. 22-Computer Science  
 ARC/Bauschlicher, C. W.

**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NCC 3-11 University of Michigan - Ann Arbor 3333**  
 Interdisciplinary collaboration in tribology

Period	Obligations
06/05/80-09/30/83	FY83: TOTAL: \$82,364
Prin. Invest.	NASA Tech. Officer CASE Category
Ludema, K. C.	LERC/Wedeven, L. D. 46-Mech Engr
Devries, W. R.	

**NGR 23-005-015 University of Michigan - Ann Arbor 3334**  
 Theoretical investigation of space charge waves in ionosphere and space plasma sheaths

Period	Obligations
10/28/63-06/31/83	FY83: TOTAL: \$2,119,400
Prin. Invest.	NASA Tech. Officer CASE Category
Nagy, A. F.	HQ-EE/Benson, R. F. 13-Physics
	HQ-EZ/Schmerling, E. R.

**NGR 23-005-320 University of Michigan - Ann Arbor 3335**  
 Theoretical and experimental studies of spacecraft space plasma interactions

Period	Obligations
01/29/69-07/31/83	FY83: TOTAL: \$710,557
Prin. Invest.	NASA Tech. Officer CASE Category
Samir, U.	HQ-EE/Benson, R. F. 13-Physics
	HQ-EE/Schmerling, E. R.

**NGR 23-005-360 University of Michigan - Ann Arbor 3336**  
 A program in aeronomy

Period	Obligations
12/29/69-01/31/84	FY83: \$200,264 TOTAL: \$2,336,100
Prin. Invest.	NASA Tech. Officer CASE Category
Sharp, W. E.	GSFC/Early, L. J. 13-Physics
	GSFC/Pless, R. H.

**NGR 23-005-464 University of Michigan - Ann Arbor 3337**  
 Optical studies of galactic X-ray sources

Period	Obligations
03/02/71-02/28/83	FY83: TOTAL: \$185,688
Prin. Invest.	NASA Tech. Officer CASE Category
Hiltner, W. A.	HQ-EZ/Weiler, E. J. 11-Astronomy

**NGT 23-005-800 University of Michigan - Ann Arbor 3338**  
 Methods of geobotanical prospecting graduate student researchers program

Period	Obligations
09/01/80-12/31/83	FY83: TOTAL: \$38,000
Prin. Invest.	NASA Tech. Officer CASE Category
Olson, C. E.	HQ-LB/Carter, C. H. 32-Geological Sci

**NSG 1306 University of Michigan - Ann Arbor 3339**  
 Models and techniques for evaluating the effectiveness of aircraft computing systems

Period	Obligations
05/01/76-06/30/82	FY83: TOTAL: \$352,107
Prin. Invest.	NASA Tech. Officer CASE Category
Meyer, J. F.	LARC/Migneault, G. E. 45-Elec Engr
	LARC/Bavuso, S. J.

**NSG 1607 University of Michigan - Ann Arbor 3340**  
 Heat generation during cornering and breaking in aircraft tires

Period	Obligations
09/01/79-06/14/84	FY83: \$45,987 TOTAL: \$230,955
Prin. Invest.	NASA Tech. Officer CASE Category
Clark, S. K.	LARC/Tanner, J. A. 41-Aero Engr

**NSG 5189 University of Michigan - Ann Arbor 3341**  
 Direct measurements of photolysis rates of stratospheric constituents

Period	Obligations
08/01/77-02/14/84	FY83: \$145,913 TOTAL: \$480,608
Prin. Invest.	NASA Tech. Officer CASE Category
Stedman, D. H.	GSFC/Reed, E. I. 31-Atmos Sci
Shetter, R. E.	

**NSG 7308 University of Michigan - Ann Arbor 3342**  
 The physical and chemical properties of the prebiotic atmosphere

Period	Obligations
02/01/77-02/29/84	FY83: \$29,425 TOTAL: \$183,023
Prin. Invest.	NASA Tech. Officer CASE Category
Kuhn, W. R.	HQ-EB/Geib, D. S. 12-Chemistry

**NSG 7404 University of Michigan - Ann Arbor 3343**  
 A program for research in planetary atmospheres

Period	Obligations
10/01/77-01/31/84	FY83: \$92,073 TOTAL: \$457,501
Prin. Invest.	NASA Tech. Officer CASE Category
Atreya, S. K.	HQ-EL/Brinton, H. C. 31-Atmos Sci
	HQ-EL/Brunk, W. E.

**NSG 7452 University of Michigan - Ann Arbor 3344**  
 Bio-chirality search with variable helicity positrons

Period	Obligations
07/01/78-10/27/83	FY83: TOTAL: \$155,541
Prin. Invest.	NASA Tech. Officer CASE Category
Rich, A.	HQ-EB/Devincenzi, D. L.
Gidley, D. W.	51-Biological Sci

**NSG 9047 University of Michigan - Ann Arbor 3345**  
 Mammalian gravity receptors: Structure and metabolism

Period	Obligations
11/01/76-10/31/83	FY83: \$73,999 TOTAL: \$364,050
Prin. Invest.	NASA Tech. Officer CASE Category
Ross, M. D.	HQ-EB/Halstead, T. W. 51-Biological Sci

**NAG 1-113 Wayne State University 3346**  
 Analysis of some acoustics-jet flow interaction problems

Period	Obligations
11/10/80-10/31/83	FY83: \$19,692 TOTAL: \$40,840
Prin. Invest.	NASA Tech. Officer CASE Category
Chow, P. L.	LARC/Maestrello, L. 41-Aero Engr

**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NAG 2-39 Wayne State University 3347**  
 Development of absorption technique for OH measurements in ambient air  
*Period Obligations*  
 05/01/80-09/30/84 FY83: \$460,000 TOTAL: \$644,800  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wang, C. C. ARC/Margozzi, A. P. 31-Atmos Sci

**NCC 2-230 Wayne State University 3348**  
 Analysis of error identification and description in full flight simulation  
*Period Obligations*  
 02/15/83-12/14/83 FY83: \$54,995 TOTAL: \$54,995  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Frankel, R. M. ARC/Murphy, M. R. 62-Social Aspects  
 ARC/Tanner, T. A.

**NASW 3544 Western Michigan University 3349**  
 Manuscript for teachers of industrial arts and vocational education  
*Period Obligations*  
 11/16/81-06/30/83 FY83: TOTAL: \$13,200  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lindbeck, J. R. HQ-LC/Thorne, M. M. 79-Soc Sci, NEC  
 Atkins, M. B. HQ-LC/Nixon, W. D.  
 Darling, D. D.

**MINNESOTA**

**NAG 5-349 Augsburg College 3350**  
 Analysis of atomic thermospheric nitrogen density  
*Period Obligations*  
 07/15/83-01/14/84 FY83: \$6,360 TOTAL: \$6,360  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Engebretson, M. J. GSFC/Bullock, G. D. 19-Phys Sci, NEC

**NSG 5285 Augsburg College 3351**  
 Analysis of long-term density variations of atomic nitrogen  
*Period Obligations*  
 07/01/78-12/31/82 FY83: TOTAL: \$54,675  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Engebretson, M. J. GSFC/Spencer, N. W. 31-Atmos Sci

**NAG 3-165 University of Minnesota-Duluth 3352**  
 Water quality measurements through use of Nimbus 7 coastal zone color scanner data  
*Period Obligations*  
 03/15/81-12/05/82 FY83: TOTAL: \$223,808  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Sydor, M. LERC/Shook, D. 13-Physics

**NAG 1-99 Univ of Minnesota - Minneapolis-St Paul 3353**  
 Increasing the damping in composite truss members  
*Period Obligations*  
 09/01/80-06/15/82 FY83: TOTAL: \$38,673  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Plunkett, R. LARC/Card, M. F. 47-Materials Engr

**NAG 1-217 Univ of Minnesota - Minneapolis-St Paul 3354**  
 Eigenspace techniques for active flutter suppression  
*Period Obligations*  
 10/01/81-12/31/83 FY83: \$30,174 TOTAL: \$58,761  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Garrard, W. L. LARC/Adams, W. M., Jr. 41-Aero Engr  
 Liebst, B. S.

**NAG 1-278 Univ of Minnesota - Minneapolis-St Paul 3355**  
 Craze micromechanics in viscoelastic aerospace materials  
*Period Obligations*  
 06/01/82-05/31/84 FY83: \$72,000 TOTAL: \$127,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hsiao, C. C. LARC/Elber, W. 47-Materials Engr  
 LARC/Newman, J. C., Jr.

**NAG 2-4 Univ of Minnesota - Minneapolis-St Paul 3356**  
 A subsurface panel method  
*Period Obligations*  
 11/01/79-10/31/82 FY83: TOTAL: \$77,583  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Moran, J. P. ARC/Chapman, G. T. 41-Aero Engr

**NAG 2-31 Univ of Minnesota - Minneapolis-St Paul 3357**  
 Condensation nuclei measurements in the stratosphere for the NASA space program  
*Period Obligations*  
 02/01/80-12/31/83 FY83: \$51,007 TOTAL: \$230,007  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wilson, J. C. ARC/Margozzi, A. P. 31-Atmos Sci  
 Liu, B. J.

**NAG 2-63 Univ of Minnesota - Minneapolis-St Paul 3358**  
 Drop dynamics and breakup  
*Period Obligations*  
 08/01/80-09/30/83 FY83: \$36,000 TOTAL: \$116,075  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Scriven, L. E. ARC/Brooks, W. F. 13-Physics

**NAG 3-161 Univ of Minnesota - Minneapolis-St Paul 3359**  
 Studies of acoustical properties of bulk porous flexible fibrous materials  
*Period Obligations*  
 02/20/81-06/30/84 FY83: TOTAL: \$84,345  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lambert, R. F. LERC/Rice, E. J. 13-Physics  
 LERC/Baumeister, K. J.

**NAG 3-286 Univ of Minnesota - Minneapolis-St Paul 3360**  
 Boundary layer transition investigation on curved surfaces  
*Period Obligations*  
 06/01/82-11/30/83 FY83: TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Simon, T. W. LERC/Gaugler, R. E. 46-Mech Engr  
 LERC/Brigham, B. A.

**NASA'S UNIVERSITY PROGRAM**  
**MINNESOTA (Continued)**

**NAG 5-190 Univ of Minnesota - Minneapolis-St Paul 3361**  
 Study of variable extinction of hot stars with circumstellar dust shells

Period	Obligations
07/01/81-12/31/83	FY83: \$5,600 TOTAL: \$13,618
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Sitko, M. L.	GSFC/Kondo, Y.
Stein, W. A.	CASE Category 11-Astronomy

**NAG 5-191 Univ of Minnesota - Minneapolis-St Paul 3362**  
 Ultraviolet spectroscopy of supergiants

Period	Obligations
07/01/81-03/31/83	FY83: TOTAL: \$9,200
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Humphreys, R. M.	GSFC/Kondo, Y.
	CASE Category 11-Astronomy

**NAG 5-313 Univ of Minnesota - Minneapolis-St Paul 3363**  
 The geoid as indicator of large-scale mantle convection and the proper motion of hotspots

Period	Obligations
05/01/83-04/30/84	FY83: \$17,284 TOTAL: \$17,284
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Chase, C. G.	GSFC/Welker, J. E.
	CASE Category 32-Geological Sci

**NAG 6-11 Univ of Minnesota - Minneapolis-St Paul 3364**  
 Investigation of auroral electrodynamics and argon release for controlled studies (ARCS)

Period	Obligations
04/23/81-04/22/84	FY83: \$75,348 TOTAL: \$230,388
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Cahill, L. J.	GSFC/Early, L. J.
Kintner, P. M.	WFC/Pless, R. H.
	CASE Category 13-Physics

**NAG 9-60 Univ of Minnesota - Minneapolis-St Paul 3365**  
 Rare gas studies on lunar, meteoritic, and selected terrestrial materials

Period	Obligations
02/01/83-01/31/84	FY83: \$138,000 TOTAL: \$138,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Pepin, R. O.	JSC/Dietrich, J. W.
	CASE Category 32-Geological Sci

**NAGW 485 Univ of Minnesota - Minneapolis-St Paul 3366**  
 Sutil CO2 well investigation

Period	Obligations
08/01/83-03/31/84	FY83: \$4,975 TOTAL: \$4,975
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Alexander, E. C.	HQ-EL/Williams, R. J.
	CASE Category 32-Geological Sci
	HQ-EL/French, B. M.

**NAS 5-11310 Univ of Minnesota - Minneapolis-St Paul 3367**  
 A.C. Electric fields experiment Helios

Period	Obligations
06/29/70-12/31/83	FY83: \$9,997 TOTAL: \$1,587,219
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Kellogg, P. J.	GSFC/Bullock, G.
	CASE Category 11-Astronomy

**NAS 5-11438 Univ of Minnesota - Minneapolis-St Paul 3368**  
 Open source neutral mass spectrometers for AE spacecraft, missions C, D, and E

Period	Obligations
06/15/71-06/30/83	FY83: TOTAL: \$1,364,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Nier, A. O.	GSFC/Bullock, G.
	CASE Category 31-Atmos Sci

**NAS 5-25389 Univ of Minnesota - Minneapolis-St Paul 3369**  
 Dynamic Explorer A and B magnetometer experiment support

Period	Obligations
11/08/78-09/30/83	FY83: \$32,800 TOTAL: \$148,741
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Cahill, L. J., Jr.	GSFC/Sugiura, M.
	CASE Category 11-Astronomy

**NAS 5-25753 Univ of Minnesota - Minneapolis-St Paul 3370**  
 Selected hardware for unified radio and plasma wave experiment for International Solar Polar Mission

Period	Obligations
07/03/79-05/30/86	FY83: \$195,877 TOTAL: \$1,155,789
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Kellogg, P. J.	GSFC/Klein, B.
	CASE Category 11-Astronomy

**NAS 5-26056 Univ of Minnesota - Minneapolis-St Paul 3371**  
 Generate an investigation development plan and establish the preliminary interfaces between the space transportation system/ Spacelab and instrument per high energy interactions of cosmic rays

Period	Obligations
02/14/80-03/31/83	FY83: TOTAL: \$328,409
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Waddington, C. J.	GSFC/Sing, M.
	CASE Category 11-Astronomy

**NAS 8-27977 Univ of Minnesota - Minneapolis-St Paul 3372**  
 Design, development, and operation of Cerenkov portion of the ACR-7 heavy nuclei experiment under the HEAO program

Period	Obligations
06/16/72-09/30/84	FY83: \$9,000 TOTAL: \$1,778,908
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Waddington, C. J.	MSFC/Stone, J. F.
	CASE Category 11-Astronomy

**NAS 9-16427 Univ of Minnesota - Minneapolis-St Paul 3373**  
 Sunflower stress identification study

Period	Obligations
08/24/81-12/31/82	FY83: TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Lillesand, T. M.	JSC/Whitehead, V. S.
	CASE Category 39-Env Sci, NEC

**NGL 24-005-009 Univ of Minnesota - Minneapolis-St Paul 3374**  
 Development and application of mass spectrometers to studies of Earth's upper atmosphere and planetary atmospheres

Period	Obligations
08/01/62-04/30/84	FY83: \$40,000 TOTAL: \$2,053,682
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Nier, A. O.	HQ-EL/Brinton, H. C.
	CASE Category 31-Atmos Sci
	HQ-EL/Brunk, W. E.

# **NASA'S UNIVERSITY PROGRAM** **MINNESOTA (Continued)**

**NGL 24-005-225 Univ of Minnesota - Minneapolis-St Paul 3375**  
Lunar sample analysis

Period	Obligations	
01/26/71-05/31/83	FY83: TOTAL: \$1,230,349	
Prin. Invest.	NASA Tech. Officer	CASE Category
Pepin, R. O.	JSC/Dietrich, J. W.	13-Physics

**NGL 24-005-263 Univ of Minnesota - Minneapolis-St Paul 3376**  
Study of Minnesota forests and lakes using data from Earth Resources Technology Satellites

Period	Obligations	
07/06/72-12/31/82	FY83: TOTAL: \$635,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hobbie, R. K.	HQ-EL/Vitale, J. A.	39-Env Sci, NEC

**NGR 24-005-050 Univ of Minnesota - Minneapolis-St Paul 3377**  
Measurement of the gamma ray flux of various celestial point sources from high altitude balloons

Period	Obligations	
04/21/65-11/30/83	FY83: \$142,985 TOTAL: \$1,417,693	
Prin. Invest.	NASA Tech. Officer	CASE Category
Waddington, C. J.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Opp, A. G.	

**NSG 1431 Univ of Minnesota - Minneapolis-St Paul 3378**  
Neutral constituent measurements in the stratosphere

Period	Obligations	
07/01/77-12/31/83	FY83: \$197,667 TOTAL: \$728,358	
Prin. Invest.	NASA Tech. Officer	CASE Category
Mauersberger, K.	LARC/Beswick, A. G.	31-Atmos Sci
Nier, A. O.		

**NSG 2014 Univ of Minnesota - Minneapolis-St Paul 3379**  
Exploratory astrophysics and infrared astronomy

Period	Obligations	
02/01/74-10/31/83	FY83: TOTAL: \$494,929	
Prin. Invest.	NASA Tech. Officer	CASE Category
Ney, E. P.	HQ-EZ/Boggess, N. W.	11-Astronomy

**NSG 5088 Univ of Minnesota - Minneapolis-St Paul 3380**  
Magnetospheric physics phenomena using sounding rockets

Period	Obligations	
11/01/75-12/31/83	FY83: \$264,000 TOTAL: \$1,473,593	
Prin. Invest.	NASA Tech. Officer	CASE Category
Winckler, J. R.	GSFC/Early, L. J.	13-Physics
	GSFC/Pless, R. H.	

**NSG 5373 Univ of Minnesota - Minneapolis-St Paul 3381**  
Experiments employing a rocket-borne electron accelerator

Period	Obligations	
06/15/79-02/29/84	FY83: \$60,000 TOTAL: \$245,250	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kellogg, P. J.	GSFC/Early, L. J.	13-Physics
Bernstein, W.		

**NSG 5397 Univ of Minnesota - Minneapolis-St Paul 3382**  
Observations of emission lines in the Crab nebula

Period	Obligations	
08/01/79-12/31/84	FY83: \$18,521 TOTAL: \$39,041	
Prin. Invest.	NASA Tech. Officer	CASE Category
Davidson, K.	GSFC/Kondo, Y.	11-Astronomy
Walborn, N. R.		
Gull, T. R.		

**NSG 9050 Univ of Minnesota - Minneapolis-St Paul 3383**  
Petrologic study of returned lunar samples

Period	Obligations	
02/01/77-12/31/83	FY83: TOTAL: \$82,063	
Prin. Invest.	NASA Tech. Officer	CASE Category
Weiblen, P. W.	JSC/Dietrich, J. W.	32-Geological Sci

## **MISSISSIPPI**

**NAG 5-158 Jackson State University 3384**  
Electronic and molecular structure of gaseous ions in interstellar space

Period	Obligations	
05/01/81-07/31/83	FY83: TOTAL: \$134,740	
Prin. Invest.	NASA Tech. Officer	CASE Category
Perkins, J.	GSFC/Cody, R.	31-Atmos Sci

**NAG 1-3 Mississippi State University 3385**  
Investigation of flight test methods for the performance of general aviation aircraft

Period	Obligations	
11/01/79-12/31/82	FY83: TOTAL: \$113,480	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bull, G.	LARC/Holmes, B. J.	41-Aero Engr
Bridges, P. D.	LARC/Brown, P. W.	

**NAG 1-226 Mississippi State University 3386**  
Transonic viscous-inviscid interaction using Euler and inverse boundary-layer equations

Period	Obligations	
11/01/81-10/31/83	FY83: \$29,900 TOTAL: \$61,900	
Prin. Invest.	NASA Tech. Officer	CASE Category
Whitfield, D. L.	LARC/Thames, F. C.	41-Aero Engr
	LARC/Dwoyer, D. L.	

**NAG 1-362 Mississippi State University 3387**  
Numerical solution of high Reynolds number transonic flow past wing/body configurations

Period	Obligations	
05/16/83-05/15/84	FY83: \$36,085 TOTAL: \$36,085	
Prin. Invest.	NASA Tech. Officer	CASE Category
Koenig, K.	ARC/Jacobs, P. F.	41-Aero Engr

**NAS 8-33448 Mississippi State University 3388**  
High density circuits technology

Period	Obligations	
07/13/79-02/28/82	FY83: TOTAL: \$64,131	
Prin. Invest.	NASA Tech. Officer	CASE Category
Wade, T. E.	MSFC/Dehaye, R. F.	45-Elec Engr
	MSFC/Gould, J.	

**NASA'S UNIVERSITY PROGRAM**  
**MISSISSIPPI (Continued)**

<b>NAS 8-33450</b>	<b>Mississippi State University</b>	<b>3389</b>	Electron lithography star design guidelines
<i>Period</i>	<i>Obligations</i>		
08/02/79-08/31/82	FY83: \$6,122	TOTAL: \$85,191	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Fratter, J. B.	MSFC/Edge, T. M.	45-Elec Engr	
	MSFC/Routh, D. E.		
<b>NAS 8-33570</b>	<b>Mississippi State University</b>	<b>3390</b>	Research study: Analysis of space telescope collection systems
<i>Period</i>	<i>Obligations</i>		
07/26/79-05/31/84	FY83: \$23,401	TOTAL: \$119,746	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ingels, F. M.	MSFC/Parker, G. A.	11-Astronomy	
	MSFC/Gray, R. A.		
<b>NAS 8-33887</b>	<b>Mississippi State University</b>	<b>3391</b>	Research study: A study of high density bit transition requirements versus the effects on BCH error coding
<i>Period</i>	<i>Obligations</i>		
07/01/80-12/31/82	FY83:	TOTAL: \$48,991	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ingels, F. M.	MSFC/Sieler, B. K.	45-Elec Engr	
	MSFC/Coffey, R. D.		
<b>NAS 8-34906</b>	<b>Mississippi State University</b>	<b>3392</b>	A study of high density bit transition requirements versus the effects on error correcting code
<i>Period</i>	<i>Obligations</i>		
08/26/82-02/25/85	FY83: \$35,945	TOTAL: \$66,702	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ingels, F. M.	MSFC/Jobe, G. S. 22-Computer Science		
	MSFC/Settle, G.		
<b>NAS 8-34907</b>	<b>Mississippi State University</b>	<b>3393</b>	Temperature profiling system study
<i>Period</i>	<i>Obligations</i>		
06/29/82-04/30/83	FY83:	TOTAL: \$28,029	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Beiting, E. J.	MSFC/Powers, W. T. 19-Phys Sci, NEC		
<b>NAS 9-16273</b>	<b>Mississippi State University</b>	<b>3394</b>	Study of uncertainty analysis of projections of increased skin cancer incidence resulting from ozone reduction/increased UV-B
<i>Period</i>	<i>Obligations</i>		
04/01/81-12/31/82	FY83:	TOTAL: \$9,991	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Rundel, R.	JSC/Nachtwey, D. S.	13-Physics	
<b>NASW 3552</b>	<b>Mississippi State University</b>	<b>3395</b>	Symposium on numerical grid generation
<i>Period</i>	<i>Obligations</i>		
12/23/81-09/30/82	FY83:	TOTAL: \$37,601	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Thompson, J. F.	HQ-RT/Graves, R. A.	29-Math/Computer, NEC	
<b>NCC 2-184</b>	<b>Mississippi State University</b>	<b>3396</b>	Computation of transonic viscous-inviscid interacting flow
<i>Period</i>	<i>Obligations</i>		
04/01/82-09/30/82	FY83:	TOTAL: \$3,719	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Whitefield, D. L.	ARC/Horstman, C. C.	41-Aero Engr	
	ARC/Marvin, J. G.		
<b>NGL 25-001-054</b>	<b>Mississippi State University</b>	<b>3397</b>	Application of remotely sensed data to state and regional problems
<i>Period</i>	<i>Obligations</i>		
11/01/73-10/30/84	FY83:	TOTAL: \$1,050,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Miller, W. F.	HQ-ET/Vitale, J. A.	39-Env Sci, NEC	
<b>NGR 25-001-055</b>	<b>Mississippi State University</b>	<b>3398</b>	Numerical solution of the Navier-Stokes equations for arbitrary two-dimensional multi-element airfoils
<i>Period</i>	<i>Obligations</i>		
01/01/74-12/31/83	FY83:	TOTAL: \$298,210	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Thompson, J. F.	LARC/Thames, F. C.	41-Aero Engr	
	LARC/South, J. C., Jr.		
<b>NGT 25-001-801</b>	<b>Mississippi State University</b>	<b>3399</b>	Graduate student researchers program
<i>Period</i>	<i>Obligations</i>		
08/01/82-07/31/84	FY83: \$15,000	TOTAL: \$28,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mitchell, J. R.	HQ-LB/Carter, C. H.	45-Elec Engr	
<b>NGT 25-006-800</b>	<b>Mississippi State University</b>	<b>3400</b>	Graduate student researchers program
<i>Period</i>	<i>Obligations</i>		
06/01/82-05/31/84	FY83: \$15,000	TOTAL: \$28,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ingels, F. M.	HQ-LB/Owens, F. C.	45-Elec Engr	
<b>NSG 1577</b>	<b>Mississippi State University</b>	<b>3401</b>	Transformation of two and three dimensional regions by elliptic systems
<i>Period</i>	<i>Obligations</i>		
11/15/78-11/14/83	FY83: \$29,171	TOTAL: \$125,735	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Thompson, J. F.	LARC/Smith, R. E., Jr.	21-Mathematics	
Mastin, C. W.	LARC/Shoosmith, J. N.		
<b>NSG 1623</b>	<b>Mississippi State University</b>	<b>3402</b>	Theoretical investigation of high-lift aerodynamics
<i>Period</i>	<i>Obligations</i>		
08/20/79-12/31/83	FY83:	TOTAL: \$175,951	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bennett, A. G.	LARC/Liu, C. H.	41-Aero Engr	
Thompson, J. F.			

# **NASA'S UNIVERSITY PROGRAM** **MISSISSIPPI (Continued)**

**NSG 1539**      **Mississippi University For Women**      **3403**  
Synthesis of all meta-substituted anhydrides for high temperature polyimides  
*Period*      *Obligations*  
06/15/78-12/31/83      FY83: \$37,872      TOTAL: \$166,338  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Pratt, J. R.      LARC/StClair, T. L.      12-Chemistry

**NAGW 170**      **University of Missouri - Columbia**      **3410**  
Galilean satellite mapping programs  
*Period*      *Obligations*  
04/01/81-01/31/84      FY83:      TOTAL: \$12,745  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Whitford-stark H. J. L.      HQ-EL/Boyce, J. M.      32-Geological Sci  
HQ-EL/Holt, H. E.

**NAS 8-35183**      **University of Mississippi - University**      **3404**  
An airplane sensor to measure the charge and shape of cloud precipitation particles  
*Period*      *Obligations*  
02/22/83-02/21/84      FY83: \$25,885      TOTAL: \$25,885  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Marshall, T. C.      MSFC/Christian, H. J.      31-Atmos Sci  
MSFC/Smith, G. T.

**NAS 8-31849**      **University of Missouri - Columbia**      **3411**  
Cloud physics laboratory science simulator  
*Period*      *Obligations*  
04/29/76-11/14/81      FY83:      TOTAL: \$319,958  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Kassner, J. L., Jr.      MSFC/Smith, R. C.      31-Atmos Sci  
MSFC/Anderson, B. J.

**NAG 1-49**      **University of Southern Mississippi**      **3405**  
A photoionization mass spectrometer study of carbon vapor  
*Period*      *Obligations*  
03/01/80-09/30/82      FY83:      TOTAL: \$27,016  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Rayborn, G. H.      LARC/Jones, J. J.      13-Physics

**NAS 9-15477**      **University of Missouri - Columbia**      **3412**  
Development and verification of simulation models for analyzing orbiter digital communications and data links  
*Period*      *Obligations*  
01/01/78-04/15/83      FY83: \$9,998      TOTAL: \$79,564  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Tranter, W. H.      JSC/Porter, J.      29-Math/Computer, NEC

## **MISSOURI**

**NAS 8-33370**      **Saint Louis University**      **3406**  
Kinetic energy budgets in areas of intense convections  
*Period*      *Obligations*  
04/01/79-12/30/83      FY83: \$6,000      TOTAL: \$182,078  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Fuelburg, H. E.      MSFC/Hill, K.      31-Atmos Sci  
MSFC/Turner, R. E.

**NAS13-174**      **University of Missouri - Columbia**      **3413**  
Incorporation of LANDSAT technology into farmers' information system being developed by NASA and the Missouri farmers' association  
*Period*      *Obligations*  
03/18/81-12/31/82      FY83: \$20,000      TOTAL: \$80,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Pirog, R.      NSTL/Joyce, A. T.      32-Geological Sci

**NAS 8-35330**      **Saint Louis University**      **3407**  
Statistical analysis and use of vas radiance data  
*Period*      *Obligations*  
09/06/83-09/05/86      FY83: \$83,000      TOTAL: \$83,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Fuelberg, H. E.      MSFC/Wilson, G. S.      31-Atmos Sci  
MSFC/Arnold, J. E.

**NCC 2-199**      **University of Missouri - Columbia**      **3414**  
Aerodynamic holography in transonic flow  
*Period*      *Obligations*  
07/01/82-09/30/83      FY83:      TOTAL: \$25,867  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Miles, J. B.      ARC/Brown, J. L.      41-Aero Engr

**NGT 26-006-800**      **Saint Louis University**      **3408**  
Graduate student researchers program  
*Period*      *Obligations*  
04/01/82-05/31/84      FY83: \$14,650      TOTAL: \$25,825  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Fuelberg, H. E.      HQ-LB/Owens, F. C.      31-Atmos Sci

**NAG 1-26**      **University of Missouri - Rolla**      **3415**  
Aerodynamic-structural study of canard wing, dual wing, and conventional wing system for general aviation applications  
*Period*      *Obligations*  
01/01/80-08/31/82      FY83:      TOTAL: \$144,813  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Selberg, B. P.      LARC/Holmes, B. J.      41-Aero Engr  
Cronin, D. L.

**NAGW 46**      **University of Missouri - Columbia**      **3409**  
Development of remote sensing experience at the University of Missouri-Columbia  
*Period*      *Obligations*  
04/01/80-03/31/86      FY83: \$100,000      TOTAL: \$485,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Johannsen, C. J.      HQ-EL/Tuyahov, A. J.      39-Env Sci, NEC

**NAG 1-198**      **University of Missouri - Rolla**      **3416**  
Near and far field radiation for ducts using a finite and infinite element approach  
*Period*      *Obligations*  
08/15/81-09/30/83      FY83:      TOTAL: \$52,824  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Eversman, W.      LARC/Watson, W. R.      41-Aero Engr  
Astley, R. J.      LARC/Lester, H. C.



**NASA'S UNIVERSITY PROGRAM**  
**MISSOURI (Continued)**

**NAG 1-240**                      **University of Missouri - Rolla**                      **3417**  
 Noise transmission through composite panels  
*Period*    *Obligations*  
 01/01/82-05/31/84                      FY83: \$39,987                      TOTAL: \$79,958  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Koval, L. R.                      LARC/Powell, C. A.                      41-Aero Engr  
    LARC/Mixson, J. S.

**NAG 1-380**                      **University of Missouri - Rolla**                      **3418**  
 Transport properties of air at high temperatures  
*Period*    *Obligations*  
 07/01/83-06/30/84                      FY83: \$20,732                      TOTAL: \$20,732  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Biolsi, L., Jr.                      LARC/Sutton, K.                      12-Chemistry  
    LARC/Jones, J. J.

**NAG 1-394**                      **University of Missouri - Rolla**                      **3419**  
 Fundamental studies of structure borne noise for advanced turboprop applications  
*Period*    *Obligations*  
 09/01/83-08/31/84                      FY83: \$41,443                      TOTAL: \$41,443  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Eversman, W.                      LARC/Mayes, W. H.                      41-Aero Engr  
 Koval, L. R.                      LARC/Metcalf, V. L.

**NAG 3-178**                      **University of Missouri - Rolla**                      **3420**  
 Study of sound transmission in high speed flows  
*Period*    *Obligations*  
 08/31/81-10/29/83                      FY83: \$37,803                      TOTAL: \$74,632  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Eversman, W.                      LERC/Baumeister, K. J.                      41-Aero Engr  
    LERC/Rice, E. J.

**NAS 8-32976**                      **University of Missouri - Rolla**                      **3421**  
 Monodisperse cloud experiment  
*Period*    *Obligations*  
 04/03/78-09/30/82                      FY83:                      TOTAL: \$195,655  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Hagen, D. E.                      MSFC/Smith, R. E.                      31-Atmos Sci

**NAS 8-34603**                      **University of Missouri - Rolla**                      **3422**  
 An experimental study of ice nucleation and crystal growth in a cloud simulation facility  
*Period*    *Obligations*  
 12/18/81-12/17/83                      FY83:                      TOTAL: \$155,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Hagen, D. E.                      MSFC/Fogle, V.                      13-Physics  
    MSFC/Williams, J. R.

**NAS 8-34758**                      **University of Missouri - Rolla**                      **3423**  
 Containerless processing of glass forming melts in space  
*Period*    *Obligations*  
 03/02/82-02/29/84                      FY83: \$87,370                      TOTAL: \$167,993  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Day, D. E.                      MSFC/Fallon, R. A.                      13-Physics  
    MSFC/Williams, J. R.

**NAS 8-35325**                      **University of Missouri - Rolla**                      **3424**  
 A study of fatigue damage on detected superalloys by position annihilation spectrometry  
*Period*    *Obligations*  
 05/09/83-05/08/84                      FY83: \$62,074                      TOTAL: \$62,074  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Leighly, H. P.                      MSFC/Munafo, P. M.                      47-Materials Engr  
    MSFC/Wright, L.

**NAS13-150**                      **University of Missouri - Rolla**                      **3425**  
 Conduct short courses in remote sensing, as an aid in mine engineering, reclamation and quality control  
*Period*    *Obligations*  
 05/15/80-05/15/82                      FY83:                      TOTAL: \$14,930  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Elifrits, C. D.                      NSTL/Atwell, B. H.                      32-Geological Sci

**NCA 2-450201**                      **University of Missouri - Rolla**                      **3426**  
 Viscous effect on wings during steady transonic flight  
*Period*    *Obligations*  
 04/01/82-03/31/84                      FY83: \$10,000                      TOTAL: \$20,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Weintraub, D. J.                      ARC/Holst, T. L.                      41-Aero Engr

**NSG 1369**                      **University of Missouri - Rolla**                      **3427**  
 Transport properties in the atmosphere of Jupiter  
*Period*    *Obligations*  
 01/01/77-12/31/83                      FY83:                      TOTAL: \$54,404  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Biolsi, L., Jr.                      LARC/Jones, J. J.                      12-Chemistry

**NSG 1452**                      **University of Missouri - Rolla**                      **3428**  
 Study of gas-solid airflow over a flat plate  
*Period*    *Obligations*  
 10/01/77-11/30/81                      FY83:                      TOTAL: \$189,752  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Patterson, G. K.                      LARC/Hefner, J. N.                      41-Aero Engr  
 Oetting, R. B.                      LARC/Bushnell, D. M.  
 Anderson, R. A.

**NAG 5-243**                      **University of Missouri - Saint Louis**                      **3429**  
 Ultraviolet observations of low excitation herbig-haro objects  
*Period*    *Obligations*  
 07/01/82-08/31/84                      FY83: \$9,408                      TOTAL: \$12,408  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 Schwartz, R. D.                      GSFC/Kondo, Y.                      11-Astronomy

**NSG 7563**                      **University of Missouri - Saint Louis**                      **3430**  
 Condensate phenomena in the polar regions of Mars  
*Period*    *Obligations*  
 03/01/79-02/28/84                      FY83: \$17,536                      TOTAL: \$93,136  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
 James, P. B.                      HQ-EL/Quaide, W. L.                      32-Geological Sci  
    HQ-EL/Boyce, J. M.

# **NASA'S UNIVERSITY PROGRAM** **MISSOURI (Continued)**

**NAG 1-250**                      **Washington University**                      **3431**  
Methodology of design of helicopter rotor blades for optimum  
dynamic characteristics  
*Period*                      *Obligations*  
01/18/82-01/17/84                      FY83: \$80,028                      TOTAL: \$135,028  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Peters, D. A.                      LARC/Young, W. H., Jr.                      41-Aero Engr

**NAG 1-295**                      **Washington University**                      **3432**  
Compression failure mechanisms of composite structures  
*Period*                      *Obligations*  
08/01/82-07/31/84                      FY83: \$45,000                      TOTAL: \$90,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Hahn, H. T.                      LARC/Williams, J. G.                      41-Aero Engr  
LARC/Starnes, J. H., JR.

**NAG 8-448**                      **Washington University**                      **3433**  
A study of the cosmic ray source composition  
*Period*                      *Obligations*  
03/28/83-03/27/84                      FY83: \$7,823                      TOTAL: \$7,823  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Margolis, S. H.                      MSFC/Stone, J. F.                      11-Astronomy

**NAG 9-7**                      **Washington University**                      **3434**  
Lunar and planetary surface dynamics and early history  
*Period*                      *Obligations*  
02/01/80-01/31/84                      FY83: \$133,600                      TOTAL: \$444,600  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Margolis, S. H.                      JSC/Dietrich, J.                      31-Atmos Sci

**NAG 9-24**                      **Washington University**                      **3435**  
Pattern, age and origin of structural features within the Ozark  
plateau and the relationship to ore deposits  
*Period*                      *Obligations*  
01/01/82-06/30/83                      FY83:                      TOTAL: \$69,758  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Arvidson, R. E.                      JSC/Duke, M. B.                      32-Geological Sci

**NAG 9-55**                      **Washington University**                      **3436**  
Solid state and mass spectrometric measurements of extrater-  
restrial  
*Period*                      *Obligations*  
02/01/83-01/31/84                      FY83: \$422,100                      TOTAL: \$422,100  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Walker, R. M.                      JSC/Dietrich, J. W.                      32-Geological Sci

**NAG 9-56**                      **Washington University**                      **3437**  
Analytical, experimental, and modeling studies of lunar and  
terrestrial igneous rocks  
*Period*                      *Obligations*  
02/01/83-01/31/84                      FY83: \$120,000                      TOTAL: \$120,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Haskin, L. A.                      JSC/Dietrich, J. W.                      32-Geological Sci

**NAGW 122**                      **Washington University**                      **3438**  
Proposal for the innovative research program  
*Period*                      *Obligations*  
11/15/80-11/14/83                      FY83: \$140,000                      TOTAL: \$410,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Walker, R. M.                      HQ-E/Rosenthal, J. D. 19-Phys Sci, NEC  
Israel, M. H.                      HQ-EP/Schrom, J. S.

**NAGW 179**                      **Washington University**                      **3439**  
Analytical, experimental, and modeling studies of lunar and  
terrestrial igneous rocks  
*Period*                      *Obligations*  
04/01/81-01/31/84                      FY83: \$153,194                      TOTAL: \$358,236  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Haskin, L. A.                      HQ-EL/Williams, R. J. 32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 301**                      **Washington University**                      **3440**  
Ground base models of hypokinesia and skeletal physiology  
*Period*                      *Obligations*  
03/01/82-02/29/84                      FY83: \$39,879                      TOTAL: \$89,879  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Simmons, D. J.                      HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 418**                      **Washington University**                      **3441**  
High efficiency turnable filters for the vacuum ultraviolet  
*Period*                      *Obligations*  
03/15/83-02/14/85                      FY83: \$90,000                      TOTAL: \$90,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Smith, W. H.                      HQ-E/Rosendhal, J. D. 32-Geological Sci

**NAGW 420**                      **Washington University**                      **3442**  
How the pea stem senses gravity, friction and flexure  
*Period*                      *Obligations*  
02/01/83-01/31/84                      FY83: \$20,000                      TOTAL: \$20,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Pickard, B. G.                      HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 432**                      **Washington University**                      **3443**  
Structure and evolution of outer planet satellite  
*Period*                      *Obligations*  
03/01/83-02/01/84                      FY83: \$20,006                      TOTAL: \$20,006  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
McKinnon, W. B.                      HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NAS 2-10636**                      **Washington University**                      **3444**  
The effect of spaceflight on the growth, mineralization and  
remodeling of the rhesus monkey skeleton  
*Period*                      *Obligations*  
05/15/80-07/31/83                      FY83:                      TOTAL: \$33,616  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Simmons, D. J.                      ARC/Souza, K. A.                      59-Life Sci, NEC  
ARC/Holton, E. A.

**NAS 5-26533**                      **Washington University**                      **3445**  
Structure of the St. Francois Mountains and surrounding lead  
belt  
*Period*                      *Obligations*  
05/12/81-09/11/82                      FY83:                      TOTAL: \$24,774  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Arvidson, R. E.                      GSFC/Stuart, L.                      32-Geological Sci  
Davies, G. F.

**NASA'S UNIVERSITY PROGRAM  
MISSOURI (Continued)**

**NAS 5-27649**      **Washington University**      **3446**  
1200 baud originate/answer data connection  
*Period*      *Obligations*  
04/27/83-10/27/83      FY83: \$3,900      TOTAL: \$3,900  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Arvidson, R. E.      GSFC/Theis, R. F.      11-Astronomy

**NAS 8-27976**      **Washington University**      **3447**  
Design, development and operation of a heavy nuclei experiment under the HEAO program  
*Period*      *Obligations*  
06/16/72-09/30/84      FY83: \$11,580      TOTAL: \$1,176,851  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Israel, M. H.      MSFC/Johnson, W. G.      11-Astronomy

**NAS 8-34341**      **Washington University**      **3448**  
Fire fighting module evaluation  
*Period*      *Obligations*  
07/15/81-06/14/83      FY83:      TOTAL: \$18,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Haefner, L. E.      MSFC/Burns, R.      46-Mech Engr  
MSFC/Kent, M. I.

**NGL 26-008-065**      **Washington University**      **3449**  
Lunar sample analysis  
*Period*      *Obligations*  
02/01/71-01/31/84      FY83:      TOTAL: \$3,577,642  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Walker, R. M.      JSC/Dietrich, J. W.      13-Physics

**NGR 26-008-001**      **Washington University**      **3450**  
Determination of characteristics of high altitude primary cosmic radiation at low latitudes  
*Period*      *Obligations*  
09/01/61-11/30/83      FY83: \$190,000      TOTAL: \$2,385,540  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Klarman, J.      HQ-EZ/Kaluzienski, L. J.      11-Astronomy  
HQ-EZ/Opp, A. G.

**NSG 1601**      **Washington University**      **3451**  
Quantitative non-destructive evaluation of damage in graphite-epoxy composites using transmitted and reflected ultrasound  
*Period*      *Obligations*  
03/15/79-03/14/84      FY83: \$99,630      TOTAL: \$368,451  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Miller, J. G.      LARC/Heyman, J. S.      13-Physics  
LARC/Cantrell, J. H., Jr.

**NSG 7087**      **Washington University**      **3452**  
Computerized analysis of Martian crater and Aeolian feature data  
*Period*      *Obligations*  
08/01/74-01/31/84      FY83: \$116,000      TOTAL: \$681,411  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Arvidson, R. E.      HQ-EL/Boyce, J. M.      32-Geological Sci  
HQ-EL/Holt, H. E.

**NSG 7334**      **Washington University**      **3453**  
Planetary observations using a new Fabry-Perot interferometric method  
*Period*      *Obligations*  
04/01/77-03/31/84      FY83: \$81,429      TOTAL: \$609,650  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Smith, W. H.      HQ-EL/Brunk, W. E.      11-Astronomy  
HQ-EL/Brinton, H. C.

**NSG 7372**      **Washington University**      **3454**  
Interferometric spectral observations of the interstellar medium in the near ultraviolet  
*Period*      *Obligations*  
07/01/77-03/31/83      FY83:      TOTAL: \$147,110  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Smith, W. H.      HQ-EZ/Weiler, E. J.      11-Astronomy  
HQ-EZ/Bogges, N. W.

**NSG 7545**      **Washington University**      **3455**  
Multispectral, topographic, and photogeologic studies of Aeolian phenomena on Mars  
*Period*      *Obligations*  
03/01/79-01/31/84      FY83: \$43,937      TOTAL: \$273,657  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Arvidson, R. E.      HQ-EL/Boyce, J. M.      32-Geological Sci  
HQ-EL/Holt, H. E.

**NSG 7578**      **Washington University**      **3456**  
Evolution of Mars  
*Period*      *Obligations*  
03/01/79-09/30/82      FY83:      TOTAL: \$222,504  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Goettal, K. A.      HQ-EL/Quaide, W. L.      32-Geological Sci  
HQ-EL/Boyce, J. M.

**NSG 9055**      **Washington University**      **3457**  
Chemical studies of materials and processes in the lunar regolith and of lunar and terrestrial igneous differentiation  
*Period*      *Obligations*  
02/01/77-01/31/84      FY83: \$10,000      TOTAL: \$663,598  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Haskin, L. A.      JSC/Dietrich, J. W.      32-Geological Sci

**MONTANA**

**NAG 2-37**      **Montana State University**      **3458**  
A study of supersonic three-dimensional turbulent boundary layer  
*Period*      *Obligations*  
05/01/80-04/30/83      FY83:      TOTAL: \$140,077  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Demetriades, A.      ARC/Horstman, C. C.      41-Aero Engr  
Reithman, T. C.

**NAS 9-16007**      **Montana State University**      **3459**  
Study to improve parameters for a winter wheat model  
*Period*      *Obligations*  
01/01/80-02/28/83      FY83: \$25,200      TOTAL: \$258,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Caprio, J. M.      JSC/Whitehead, V. S.      39-Env Sci, NEC

# **NASA'S UNIVERSITY PROGRAM** **MONTANA (Continued)**

**NCA 2-475301**      **University of Montana**      **3460**  
Leaf area index of coniferous forests measured by LANDSAT TM

Period	Obligations
04/01/83-12/31/84	FY83: \$53,840      TOTAL: \$53,840
Prin. Invest.	NASA Tech. Officer      CASE Category
Running, S.	ARC/Peterson, D. L.      39-Env Sci, NEC
Gerlach, F.	

## **NEBRASKA**

**NAG 3-95**      **University of Nebraska - Lincoln**      **3461**  
Intercalated carbon fiber conductor for aerospace use

Period	Obligations
09/01/80-01/30/84	FY83: \$30,130      TOTAL: \$94,130
Prin. Invest.	NASA Tech. Officer      CASE Category
Woollam, J. A.	LERC/Riley, T. J.      45-Elec Engr

**NAG 3-120**      **University of Nebraska - Lincoln**      **3462**  
Diffusion length measurements in gallium arsenide and other III IV semiconductor compounds

Period	Obligations
10/30/80-04/29/82	FY83:      TOTAL: \$16,956
Prin. Invest.	NASA Tech. Officer      CASE Category
Woollam, J. A.	LERC/Weinberg, I.      13-Physics

**NAG 3-154**      **University of Nebraska - Lincoln**      **3463**  
Surface passivation of III IV compound semiconductors for microwave applications

Period	Obligations
03/10/81-10/06/84	FY83: \$107,625      TOTAL: \$245,369
Prin. Invest.	NASA Tech. Officer      CASE Category
Woollam, J. A.	LERC/Liu, D. C.      13-Physics
Alterovitz, S. A.	

**NAG 3-237**      **University of Nebraska - Lincoln**      **3464**  
New semiconductor materials for novel aerospace applications

Period	Obligations
11/30/81-11/29/82	FY83:      TOTAL: \$39,426
Prin. Invest.	NASA Tech. Officer      CASE Category
Woollam, J. A.	LERC/Sundberg, G. R.      45-Elec Engr

**NAG 5-277**      **University of Nebraska - Lincoln**      **3465**  
Bidirectional reflectance modeling of non homogenous plant canopies

Period	Obligations
09/15/82-03/14/84	FY83: \$12,185      TOTAL: \$47,132
Prin. Invest.	NASA Tech. Officer      CASE Category
Norman, J. M.	GSFC/Kimes, D. S.      55-Agriculture Sci

**NAG 5-282**      **University of Nebraska - Lincoln**      **3466**  
Ultraviolet spectroscopy of the bright Cepheids

Period	Obligations
11/01/82-05/31/84	FY83: \$7,900      TOTAL: \$7,900
Prin. Invest.	NASA Tech. Officer      CASE Category
Schmidt, E. G.	GSFC/Kondo, Y.      11-Astronomy
Parsons, S. B.	

**NAG 9-16636**      **University of Nebraska - Lincoln**      **3467**  
Field measurements and modeling of corn and soybean moisture stress

Period	Obligations
06/14/82-09/30/84	FY83: \$106,000      TOTAL: \$166,000
Prin. Invest.	NASA Tech. Officer      CASE Category
Blad, B. L.	JSC/Browne, I. D.      39-Env Sci, NEC
	JSC/Pitts, D. E.

**NGL 28-004-020**      **University of Nebraska - Lincoln**      **3468**  
Applications of remote sensing in resource management in Nebraska

Period	Obligations
04/20/72-05/31/85	FY83: \$125,000      TOTAL: \$1,150,000
Prin. Invest.	NASA Tech. Officer      CASE Category
Carlson, M. P.	HQ-EL/Tuyahov, A. J.      39-Env Sci, NEC

**NGR 28-004-021**      **University of Nebraska - Lincoln**      **3469**  
Interaction of radiation with planetary gases

Period	Obligations
02/23/73-05/31/84	FY83: \$69,337      TOTAL: \$464,068
Prin. Invest.	NASA Tech. Officer      CASE Category
Samson, J. A.	HQ-EL/Brinton, H. C.      31-Atmos Sci
	HQ-EL/Brunk, W. E.

**NGT 28-004-800**      **University of Nebraska - Lincoln**      **3470**  
The effect of moisture stress on multispectral radiation from agricultural crops

Period	Obligations
09/01/80-08/31/83	FY83:      TOTAL: \$35,450
Prin. Invest.	NASA Tech. Officer      CASE Category
Blad, B. L.	HQ-LB/Carter, C. H.      39-Env Sci, NEC

**NGT 28-004-801**      **University of Nebraska - Lincoln**      **3471**  
NASA graduate student researchers program

Period	Obligations
09/01/83-08/31/84	FY83: \$14,300      TOTAL: \$14,300
Prin. Invest.	NASA Tech. Officer      CASE Category
Blad, B. L.	HQ-LB/Owens, F. C.      55-Agriculture Sci

**NSG 5391**      **University of Nebraska - Lincoln**      **3472**  
Ultraviolet spectrophotometry of Cepheids

Period	Obligations
07/01/79-06/30/82	FY83:      TOTAL: \$27,800
Prin. Invest.	NASA Tech. Officer      CASE Category
Schmidt, E. G.	GSFC/Boggess, A.      11-Astronomy
Parsons, S. B.	

## **NEVADA**

**NAS 8-34685**      **Univ. of Nevada - Desert Res. Inst.**      **3473**  
An inertial velocity reference for the NASA airborne Doppler lidar

Period	Obligations
06/25/82-09/24/83	FY83:      TOTAL: \$217,703
Prin. Invest.	NASA Tech. Officer      CASE Category
Telford, J. W.	MSFC/Bilbro, J. W.      31-Atmos Sci
	MSFC/Mastin, W. C.

**NASA'S UNIVERSITY PROGRAM  
NEVADA (Continued)**

**NAS 8-34731 Univ. of Nevada - Desert Res. Inst. 3474**  
Evaluation of data obtained from atmospheric laser Doppler velocimeter

Period	Obligations
04/26/82-07/25/84	FY83: \$49,999 TOTAL: \$119,799
Prin. Invest.	NASA Tech. Officer CASE Category
Telford, J. W.	MSFC/Fitzjarrald, D. E. 31-Atmos Sci
	MSFC/Smith, G. T.

**NAG 1-84 University of Nevada - Las Vegas 3475**  
Prediction of steady and unsteady airloads in porous wall wind tunnels

Period	Obligations
11/01/80-10/31/82	FY83: TOTAL: \$31,227
Prin. Invest.	NASA Tech. Officer CASE Category
Fromme, J. A.	LARC/Bland, S. R. 41-Aero Engr
Goldberg, M. A.	

**NAG 3-368 University of Nevada - Las Vegas 3476**  
Temperature dependence of inelastic light scattering from small particles for use in combustion diagnostic instrumentation

Period	Obligations
12/05/82-02/04/84	FY83: \$13,624 TOTAL: \$13,624
Prin. Invest.	NASA Tech. Officer CASE Category
Cloud, S. D.	LERC/Decker, A. J. 13-Physics

**NAG 2-196 University of Nevada - Reno 3477**  
Visual guidance of locomotion

Period	Obligations
06/01/82-10/31/83	FY83: \$450 TOTAL: \$44,168
Prin. Invest.	NASA Tech. Officer CASE Category
Harrington, T. L.	ARC/Hartzell, E. J. 69-Psych, NEC

**NAS 8-34605 University of Nevada - Reno 3478**  
The influence of low convective velocities on the growth of crystals

Period	Obligations
02/02/82-02/01/84	FY83: \$20,471 TOTAL: \$212,471
Prin. Invest.	NASA Tech. Officer CASE Category
Hallett, T.	MSFC/Fogle, V. 31-Atmos Sci
	MSFC/Williams, J. R.

**NCC 2-134 University of Nevada - Reno 3479**  
Proposal to implement, flight test and analyze the non-precision and precision approach capability of the weather radar approach system (WRAPS)

Period	Obligations
04/15/81-10/31/83	FY83: \$89,961 TOTAL: \$179,692
Prin. Invest.	NASA Tech. Officer CASE Category
Chisholm, J. P.	ARC/Clary, G. R. 41-Aero Engr

**NCC 2-249 University of Nevada - Reno 3480**  
Ground-surface cues for visual orientation in helicopter low level flight

Period	Obligations
05/01/83-04/30/85	FY83: \$40,000 TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer CASE Category
Harrington, T.	ARC/Hartzell, E. J. 69-Psych, NEC

**NSG 2291 University of Nevada - Reno 3481**  
Computations and turbulent flow modeling in support of helicopter rotor technology

Period	Obligations
12/01/77-11/30/83	FY83: \$37,804 TOTAL: \$216,214
Prin. Invest.	NASA Tech. Officer CASE Category
Rose, W. C.	ARC/Johnson, D. A. 41-Aero Engr
Kleppe, J. A.	ARC/Murphy, J. D.

**NEW HAMPSHIRE**

**NAG 3-13 Dartmouth College 3482**  
Ductility of polycrystalline nickel aluminum

Period	Obligations
02/01/80-01/28/84	FY83: \$40,000 TOTAL: \$159,439
Prin. Invest.	NASA Tech. Officer CASE Category
Schulson, E. M.	LERC/Whittenberger, J. D. 47-Materials Engr

**NAG 5-159 Dartmouth College 3483**  
Geological and geobotanical mapping of the Caraiba region in Brazil

Period	Obligations
04/01/81-12/31/82	FY83: TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer CASE Category
Birnie, R. W.	GSFC/Kouns, C. W. 32-Geological Sci
	GSFC/Schnetzler, C. C.

**NAG 5-287 Dartmouth College 3484**  
Observations of the ultraviolet spectra of helium white dwarfs

Period	Obligations
01/01/83-12/31/83	FY83: \$15,800 TOTAL: \$15,800
Prin. Invest.	NASA Tech. Officer CASE Category
Wegner, G. A.	GSFC/Kondo, Y. 11-Astronomy

**NAG 8-305 Dartmouth College 3485**  
Optical observations of High Energy Astronomical Observatory-B objects

Period	Obligations
01/20/80-09/30/82	FY83: TOTAL: \$9,819
Prin. Invest.	NASA Tech. Officer CASE Category
Mook, D. E.	MSFC/Stone, J. F. 11-Astronomy

**NASW 3645 Dartmouth College 3486**  
Rain attenuation prediction model development

Period	Obligations
02/01/83-09/30/83	FY83: \$59,951 TOTAL: \$59,951
Prin. Invest.	NASA Tech. Officer CASE Category
Crane, R. K.	HQ-EC/Ippolito, L. 31-Atmos Sci

**NCC 5-22 Dartmouth College 3487**  
An investigation of vegetation and other Earth resources parameters using LANDSAT and other remote sensing data

Period	Obligations
02/01/80-10/31/83	FY83: TOTAL: \$215,000
Prin. Invest.	NASA Tech. Officer CASE Category
Birnie, R. W.	GSFC/Ungar, S. G. 32-Geological Sci

**NASA'S UNIVERSITY PROGRAM  
NEW HAMPSHIRE (Continued)**

**NSG 2397** **Dartmouth College** **3488**  
Optical constants of transition metals  
*Period* *Obligations*  
07/01/79-06/30/83 FY83: TOTAL: \$124,402  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Christy, R. W. ARC/Cooper, D. M. 13-Physics

**NSG 3253** **Dartmouth College** **3489**  
Thermomechanical effects in high speed seal rubs  
*Period* *Obligations*  
02/26/79-10/30/83 FY83: TOTAL: \$122,529  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kennedy, F. E., Jr. LERC/Kascek, A. 47-Materials Engr  
LERC/Kiraly, L. J.

**NSG 5348** **Dartmouth College** **3490**  
Magnetopause studies using satellite data  
*Period* *Obligations*  
05/01/79-09/30/83 FY83: TOTAL: \$87,499  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sonnerup, B. U. GSFC/Wales, R. O. 32-Geological Sci

**NAG 5-130** **University of New Hampshire - Durham** **3491**  
Studies of solar wind minor ions  
*Period* *Obligations*  
01/01/81-01/31/84 FY83: \$22,867 TOTAL: \$95,867  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hollweg, J. V. GSFC/Ogilvie, K. W. 13-Physics  
Isenberg, P. A.

**NAG 5-228** **University of New Hampshire - Durham** **3492**  
Investigation of upstream magnets-hydro-dynamic waves  
*Period* *Obligations*  
04/01/82-06/30/83 FY83: TOTAL: \$21,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Smith, C. GSFC/Wales, R. O. 11-Astronomy

**NAG 5-617** **University of New Hampshire - Durham** **3493**  
Superthermal ion composition/distribution studies in the topside ionosphere  
*Period* *Obligations*  
02/01/83-02/01/84 FY83: \$70,000 TOTAL: \$70,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Moore, T. E. GSFC/Early, L. J. 13-Physics  
Arnoldy, R. L. GSFC/Pless, R. H.

**NAG 6-12** **University of New Hampshire - Durham** **3494**  
Investigation of auroral electrodynamics and argon (plasma) release for controlled studies  
*Period* *Obligations*  
04/23/81-04/22/84 FY83: \$185,053 TOTAL: \$284,171  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Arnoldy, R. L. GSFC/Early, L. J. 19-Phys Sci, NEC  
Kaufmann, R. L. GSFC/Pless, R. H.

**NAGW 52** **University of New Hampshire - Durham** **3495**  
Analysis of University of New Hampshire ATS-6 data multiple spacecraft studies  
*Period* *Obligations*  
02/01/80-01/31/83 FY83: TOTAL: \$102,950  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Moore, J. T. HQ-EE/Lynch, J. T. 32-Geological Sci  
HQ-EE/Schmerling, E. R.

**NAGW 76** **University of New Hampshire - Durham** **3496**  
Theoretical studies group on the physics of the solar atmosphere and the solar wind  
*Period* *Obligations*  
06/01/80-10/31/83 FY83: TOTAL: \$668,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fisk, L. A. HQ-EE/Butler, D. M. 13-Physics

**NAGW 271** **University of New Hampshire - Durham** **3497**  
Research on studies of shelf circulation  
*Period* *Obligations*  
11/01/81-10/31/83 FY83: \$125,000 TOTAL: \$324,929  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pettigrew, N. R. HQ-EE/McGoldrick, L. F.  
Irish, J. D. HQ-EE/Wilson, W. S. 33-Oceanography

**NAGW 371** **University of New Hampshire - Durham** **3498**  
Analysis of interplanetary data obtained by CRS experiment on Voyagers I and II  
*Period* *Obligations*  
10/01/82-10/30/84 FY83: \$61,600 TOTAL: \$61,600  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Webber, W. R. HQ-EL/Quaide, W. L. 11-Astronomy  
HQ-EL/Evans, N.

**NAGW 453** **University of New Hampshire - Durham** **3499**  
Planetary biochemical cycles and their perturbation by humans  
*Period* *Obligations*  
02/15/83-02/14/84 FY83: \$107,359 TOTAL: \$107,359  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Moore, B. HQ-EB/Rambler, M. 51-Biological Sci  
HQ-EB/Devincenzi, D. L.

**NAS 5-23761** **University of New Hampshire - Durham** **3500**  
Hardware phase of the solar gamma ray experiment for the Solar Maximum Mission  
*Period* *Obligations*  
10/01/76-11/30/84 FY83: \$443,746 TOTAL: \$4,679,919  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Chupp, E. L. GSFC/Underwood, C. 11-Astronomy  
Forrest, D. J. GSFC/Corrigan, J. P.

**NAS 5-24354** **University of New Hampshire - Durham** **3501**  
Analysis and interpretation of Pioneer 10 and 11 data  
*Period* *Obligations*  
10/16/77-02/15/84 FY83: \$29,950 TOTAL: \$168,637  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Webber, W. R. GSFC/Trainor, J. H. 13-Physics

# **NASA'S UNIVERSITY PROGRAM** **NEW HAMPSHIRE (Continued)**

**NAS 5-26645 University of New Hampshire - Durham 3502**  
Definition phase of the D-1 detector subsystem for the imaging Compton telescope

Period	Obligations
09/01/81-03/31/91	FY83: \$2,810,000
	TOTAL: \$4,441,800

Prin. Invest.	NASA Tech. Officer	CASE Category
Lockwood, J. A.	GSFC/Davis, M. A.	11-Astronomy

**NCC 2-27 University of New Hampshire - Durham 3503**  
Controlled ecology life support system workshops: The biological problems and experimental program

Period	Obligations
10/01/79-12/31/83	FY83: \$87,550
	TOTAL: \$547,969

Prin. Invest.	NASA Tech. Officer	CASE Category
Moore, B.	ARC/MacElroy, R. D.	51-Biological Sci

**NCC 2-209 University of New Hampshire - Durham 3504**  
Control of plant growth within a CELSS

Period	Obligations
09/01/82-11/30/83	FY83: \$73,693
	TOTAL: \$123,893

Prin. Invest.	NASA Tech. Officer	CASE Category
Moore, B., III	ARC/MacElroy, R. D.	51-Biological Sci
Schwartzkopf, S.	ARC/Wydeven, T.	

**NCC 2-210 University of New Hampshire - Durham 3505**  
Control of gas exchange in gas-closed animal/plant systems: An experimental and modelling study of the feasibility of using organisms as control elements in a CELSS

Period	Obligations
09/01/82-11/30/83	FY83: \$67,172
	TOTAL: \$96,972

Prin. Invest.	NASA Tech. Officer	CASE Category
Averner, M. M.	ARC/MacElroy, R. D.	51-Biological Sci
Moore, B., III	ARC/Wydeven, T.	

**NGL 30-002-021 University of New Hampshire - Durham 3506**  
Investigation and development of techniques for solar neutron and gamma ray detection

Period	Obligations
02/28/66-02/28/84	FY83: \$130,000
	TOTAL: \$1,847,365

Prin. Invest.	NASA Tech. Officer	CASE Category
Chupp, E. L.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Opp, A. G.	

**NGR 30-002-052 University of New Hampshire - Durham 3507**  
Research program in area of cosmic ray and X-ray astronomy

Period	Obligations
02/12/70-10/31/83	FY83: \$128,400
	TOTAL: \$1,572,367

Prin. Invest.	NASA Tech. Officer	CASE Category
Webber, W. R.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Opp, A. G.	

**NSG 7411 University of New Hampshire - Durham 3508**  
Theoretical studies in solar particle physics

Period	Obligations
10/01/77-10/30/83	FY83: \$43,200
	TOTAL: \$220,265

Prin. Invest.	NASA Tech. Officer	CASE Category
Fisk, L. A.	HQ-EZ/Chipman, E. G.	13-Physics

**NSG 7481 University of New Hampshire - Durham 3509**  
Application of a double Compton telescope to measurements of the 1-15 MeV extra-terrestrial gamma rays

Period	Obligations
03/01/78-08/31/84	FY83: \$51,100
	TOTAL: \$254,919

Prin. Invest.	NASA Tech. Officer	CASE Category
Lockwood, J. A.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
Webber, W. R.	HQ-EZ/Opp, A. G.	

## **NEW JERSEY**

**NASW 3725 Drew University 3510**  
Interactive learning demonstration project

Period	Obligations
04/04/83-09/30/83	FY83: \$44,687
	TOTAL: \$44,687

Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, W.	HQ-LF/Nixon, W. D.	29-Math/Computer, NEC
	HQ-LF/Counts, E. G.	

**NAG 1-108 Princeton University 3511**  
Generation and visualization on techniques for large scale vortex structures

Period	Obligations
11/01/80-12/31/81	FY83:
	TOTAL: \$19,559

Prin. Invest.	NASA Tech. Officer	CASE Category
Curtiss, H. C.	LARC/Hefner, J. N.	41-Aero Engr
	LARC/Bushnell, D. M.	

**NAG 1-152 Princeton University 3512**  
Development of the laser Doppler velocimeter for turbulence measurements in nitrogen

Period	Obligations
02/04/81-02/03/82	FY83:
	TOTAL: \$20,000

Prin. Invest.	NASA Tech. Officer	CASE Category
Miles, R. B.	LARC/Hoppe, J. C.	19-Phys Sci, NEC
Zimmerman, M.	LARC/Hunter, W. W.	

**NAG 1-186 Princeton University 3513**  
Accelerated solution methods for inviscid transonic flows

Period	Obligations
12/03/81-01/02/84	FY83: \$120,000
	TOTAL: \$200,000

Prin. Invest.	NASA Tech. Officer	CASE Category
Jameson, A.	LARC/Salas, M. D.	41-Aero Engr
Baker, T. J.	LARC/South, J. C., Jr.	

**NAG 2-96 Princeton University 3514**  
Numerical calculation of transonic flows past complex aerody[-]namic

Period	Obligations
02/01/81-03/31/84	FY83: \$50,000
	TOTAL: \$149,950

Prin. Invest.	NASA Tech. Officer	CASE Category
Jameson, A.	ARC/Hicks, R. M.	41-Aero Engr

**NASA'S UNIVERSITY PROGRAM  
NEW JERSEY (Continued)**

<b>NAG 2-98</b>	<b>Princeton University</b>		<b>3515</b>
	An analytical study of the stability and control vertical take-off and landing airships		
	<i>Period</i>	<i>Obligations</i>	
	02/01/81-09/30/82	FY83: TOTAL: \$41,964	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Curtiss, H. C.	ARC/Talbot, P. D.	41-Aero Engr
<b>NAG 2-109</b>	<b>Princeton University</b>		<b>3516</b>
	Three-dimensional shock wave/turbulent boundary layer interaction experiments		
	<i>Period</i>	<i>Obligations</i>	
	04/01/81-10/31/83	FY83: \$30,000 TOTAL: \$129,959	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Settles, G. S.	ARC/Horstman, C. C.	41-Aero Engr
	Bogdonoff, S. M.	ARC/Marvin, J. G.	
<b>NAG 2-244</b>	<b>Princeton University</b>		<b>3517</b>
	Studies in helicopter aerodynamics and control		
	<i>Period</i>	<i>Obligations</i>	
	07/01/83-08/31/83	FY83: \$23,100 TOTAL: \$23,100	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Curtiss, H. C.	ARC/Decker, W. A.	41-Aero Engr
		ARC/Ciolani, L. S.	
<b>NAG 3-8</b>	<b>Princeton University</b>		<b>3518</b>
	Coupling of transport and chemical processes in catalytic combustion		
	<i>Period</i>	<i>Obligations</i>	
	12/01/79-12/30/82	FY83: TOTAL: \$163,435	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Bracco, F. V.	LERC/Szaniszlo, A. J.	41-Aero Engr
	Royce, B. S.		
<b>NAG 3-110</b>	<b>Princeton University</b>		<b>3519</b>
	Development and validation of an input/output model of general aviation aircraft fuel efficiency		
	<i>Period</i>	<i>Obligations</i>	
	10/01/80-09/30/83	FY83: TOTAL: \$92,870	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Sweet, L. M.	LERC/Rice, W.	41-Aero Engr
	Curtis, H. C.	LERC/Seidel, E. C.	
<b>NAG 3-221</b>	<b>Princeton University</b>		<b>3520</b>
	Dynamics of nonlinear engine structural systems including damping		
	<i>Period</i>	<i>Obligations</i>	
	10/05/81-11/03/83	FY83: \$56,143 TOTAL: \$105,501	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Dowell, E. H.	LERC/McAleese, J. D.	46-Mech Engr
<b>NAG 3-259</b>	<b>Princeton University</b>		<b>3521</b>
	Behavior of fluid globules in external fields		
	<i>Period</i>	<i>Obligations</i>	
	02/20/82-08/30/84	FY83: \$40,915 TOTAL: \$70,915	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Saville, D. A.	LERC/Chai, A. T.	13-Physics
<b>NAG 3-308</b>	<b>Princeton University</b>		<b>3522</b>
	Nonlinear flutter of fan and compressor blades		
	<i>Period</i>	<i>Obligations</i>	
	10/01/82-11/30/83	FY83: TOTAL: \$54,596	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Bendiksen, O. O.	LERC/Brown, G. V.	41-Aero Engr
<b>NAG 3-310</b>	<b>Princeton University</b>		<b>3523</b>
	The oxidation degradation of aromatic compounds		
	<i>Period</i>	<i>Obligations</i>	
	09/01/82-08/29/85	FY83: TOTAL: \$144,045	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Glassman, I.	LERC/Brabbs, T. A.	12-Chemistry
	Brezinsky, K.	LERC/Lezberg, E. A.	
<b>NAG 3-353</b>	<b>Princeton University</b>		<b>3524</b>
	Role of surface generated radicals in catalytic combustion		
	<i>Period</i>	<i>Obligations</i>	
	11/15/82-12/31/83	FY83: \$60,000 TOTAL: \$60,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Bracco, F. V.	LERC/Anderson, D. N.	41-Aero Engr
	Royce, B. S.		
	Santavicca, D. A.		
<b>NAG 3-380</b>	<b>Princeton University</b>		<b>3525</b>
	Fundamental study of droplet combustion at reduced gravity		
	<i>Period</i>	<i>Obligations</i>	
	12/23/82-12/22/83	FY83: \$50,000 TOTAL: \$50,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Williams, F. A.	LERC/Labus, T. L.	49-Engr, NEC
<b>NAG 3-425</b>	<b>Princeton University</b>		<b>3526</b>
	Electrostatic atomization: Fundamental studies		
	<i>Period</i>	<i>Obligations</i>	
	05/05/83-12/05/83	FY83: \$42,000 TOTAL: \$42,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Jahn, R. G.	LERC/Cassidy, J. F.	41-Aero Engr
	Kelly, A. J.		
<b>NAG 3-447</b>	<b>Princeton University</b>		<b>3527</b>
	Roles of fluid motion and other transport phenomena in morphology of materials		
	<i>Period</i>	<i>Obligations</i>	
	07/15/83-07/14/84	FY83: \$68,694 TOTAL: \$68,694	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Saville, D. A.	LERC/Chai, A.	47-Materials Engr
	Russell, W. B.	LERC/Serafini, T. T.	
<b>NAG 5-48</b>	<b>Princeton University</b>		<b>3528</b>
	Absorption measures of galactic halo gas		
	<i>Period</i>	<i>Obligations</i>	
	05/01/80-01/31/83	FY83: TOTAL: \$42,613	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	York, D. G.	GSFC/Kondo, Y.	11-Astronomy
	Wu, C. C.		
	Morton, D. G.		



**NASA'S UNIVERSITY PROGRAM**  
**NEW JERSEY (Continued)**

**NAG 5-241** **Princeton University** **3529**  
 Evaluation of selected detector array for space applications  
*Period* *Obligations*  
 06/01/82-03/31/84 FY83: TOTAL: \$49,182  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Gunn, J. E. GSFC/Kalshoven, J. 42-Astro Engr

**NAG 5-616** **Princeton University** **3530**  
 Interstellar medium absorption profile spectrograph (IMAPS)  
*Period* *Obligations*  
 01/01/83-12/31/83 FY83: \$187,719 TOTAL: \$187,719  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Jenkins, E. B. GSFC/Early, L. J. 13-Physics  
 GSFC/Pless, R. H.

**NAG 8-363** **Princeton University** **3531**  
 Compact V-V groups of galaxies  
*Period* *Obligations*  
 07/01/80-09/30/83 FY83: TOTAL: \$1,400  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bahcall, N. A. MSFC/Swearingen, J. C. 11-Astronomy

**NAG 8-420** **Princeton University** **3532**  
 Galaxy halos  
*Period* *Obligations*  
 07/28/81-07/31/83 FY83: TOTAL: \$5,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Behcall, N. A. MSFC/Stone, J. F. 11-Astronomy

**NAGW 10** **Princeton University** **3533**  
 Gaseous halos of galaxies  
*Period* *Obligations*  
 11/01/79-12/31/83 FY83: TOTAL: \$124,338  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 York, D. HQ-EZ/Weiler, E. J. 11-Astronomy  
 HQ-EZ/Boggess, N. W.

**NAGW 120** **Princeton University** **3534**  
 Extragalactic astrophysics: Young galaxies and intergalactic medium  
*Period* *Obligations*  
 11/15/80-11/14/83 FY83: TOTAL: \$201,273  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Ostriker, J. P. HQ-EP/Taylor, T. C. 13-Physics  
 HQ-EP/Heninger, L. C.

**NAGW 240** **Princeton University** **3535**  
 Study of the structure of turbulent shear flows at supersonic speeds and huge Reynolds numbers  
*Period* *Obligations*  
 09/01/81-08/31/83 FY83: TOTAL: \$374,937  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bogdonoff, S. HQ-RT/Hicks, G. 41-Aero Engr  
 Smits, A. HQ-RT/Brown, C. E.

**NAGW 372** **Princeton University** **3536**  
 Magnetic properties of the Martian surface  
*Period* *Obligations*  
 09/16/82-09/15/83 FY83: TOTAL: \$44,082  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hargraves, R. B. HQ-EL/Quaide, W. L. 32-Geological Sci  
 HQ-EL/Boyce, J. M.

**NAGW 445** **Princeton University** **3537**  
 Map galactic radiation at wave length = 1 cm  
*Period* *Obligations*  
 06/01/83-05/31/85 FY83: \$235,580 TOTAL: \$235,580  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Wilkinson, D. HQ-EZ/Boggess, N. W. 11-Astronomy  
 HQ-EZ/Weiler, E. J.

**NAGW 477** **Princeton University** **3538**  
 Copernicus data reduction and analysis  
*Period* *Obligations*  
 09/01/83-05/31/84 FY83: \$263,000 TOTAL: \$263,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Rogerson Jr., J. B. HQ-EZ/Stencel, R. E. 11-Astronomy  
 Spitzer, L., Jr. HQ-EZ/Weiler, E. J.

**NAS 1-15758** **Princeton University** **3539**  
 Navion modification and flight test support  
*Period* *Obligations*  
 03/30/79-01/19/84 FY83: \$23,440 TOTAL: \$364,780  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Stengel, R. F. LARC/Bryant, W. H. 41-Aero Engr

**NAS 1-15764** **Princeton University** **3540**  
 Investigation of flying qualities criteria for single pilot instrument flight operations  
*Period* *Obligations*  
 04/05/79-11/30/82 FY83: TOTAL: \$109,139  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Stengel, R. F. LARC/Abbott, T. S. 41-Aero Engr  
 LARC/Garren, J. F., Jr.

**NAS 1-17234** **Princeton University** **3541**  
 Inference of atmospheric parameters from shuttle upper atmosphere spectrometer (SUMS) experiment  
*Period* *Obligations*  
 12/17/82-12/16/83 FY83: \$53,640 TOTAL: \$53,640  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bienkowski, G. K. LARC/Blanchard, R. C. 41-Aero Engr  
 LARC/Jones, J. J.

**NAS 1-17247** **Princeton University** **3542**  
 A study of the feasibility of the TPSTF for high energy aerothermal testing  
*Period* *Obligations*  
 01/05/83-07/04/83 FY83: \$38,048 TOTAL: \$38,048  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bogdonoff, S. M. LARC/Wieting, A. R. 49-Engr, NEC

**NASA'S UNIVERSITY PROGRAM  
NEW JERSEY (Continued)**

<b>NAS 5-23576</b>	<b>Princeton University</b>	<b>3543</b>	Orbital operations, data reduction and analysis, and OAO guest investigator program
<i>Period</i>	<i>Obligations</i>		
09/01/76-12/31/83	FY83: TOTAL: \$4,680,107		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Spitzer, L., Jr.	GSFC/Bullock, G. D.	11-Astronomy	

<b>NAS 8-32614</b>	<b>Princeton University</b>	<b>3550</b>	Develop and test mathematical models of the three dimensional flow field and particle motions
<i>Period</i>	<i>Obligations</i>		
08/23/77-04/01/84	FY83: \$95,000 TOTAL: \$451,586		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Saville, D. A.	MSFC/Fogle, W.	51-Biological Sci	
	MSFC/Williams, J. R.		

<b>NAS 5-24486</b>	<b>Princeton University</b>	<b>3544</b>	Microwave and theoretical studies for Cosmic Background Explorer satellite
<i>Period</i>	<i>Obligations</i>		
03/01/78-05/31/83	FY83: \$29,000 TOTAL: \$213,412		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wilkinson, D. T.	GSFC/Mather, J. C.	11-Astronomy	
Peebles, P. J.	GSFC/Donohoe, M. J.		

<b>NCC 1-64</b>	<b>Princeton University</b>	<b>3551</b>	Non-intrusive flow measurements on the Space Shuttle
<i>Period</i>	<i>Obligations</i>		
01/26/82-01/25/83	FY83: TOTAL: \$40,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Miles, R. B.	LARC/Eide, D. G.	41-Aero Engr	
Bogdanoff, S. M.	LARC/Arrington, J. P.		

<b>NAS 5-25084</b>	<b>Princeton University</b>	<b>3545</b>	Data and operations team leader for the space telescope project
<i>Period</i>	<i>Obligations</i>		
05/23/78-12/31/84	FY83: \$70,000 TOTAL: \$492,840		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Groth, E. J.	GSFC/White, R. A.	11-Astronomy	

<b>NCC 2-94</b>	<b>Princeton University</b>	<b>3552</b>	Aircraft position measurement using laser beacon systems
<i>Period</i>	<i>Obligations</i>		
08/15/80-01/31/83	FY83: TOTAL: \$189,018		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Miles, R. B.	ARC/Cross, J. L.	41-Aero Engr	
Sweet, L. M.	ARC/Shockey, G. A.		

<b>NAS 5-25896</b>	<b>Princeton University</b>	<b>3546</b>	Laser geodynamics experiment study of polar motion, plate rigidity and plate motions
<i>Period</i>	<i>Obligations</i>		
11/02/79-02/01/83	FY83: TOTAL: \$130,500		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Morgan, W. J.	GSFC/Stephanides, C. C.	32-Geological Sci	
Smith, D. E.			

<b>NGL 31-001-007</b>	<b>Princeton University</b>	<b>3553</b>	Theoretical and experimental studies of ultraviolet phenomena of astronomical interest and galactic gas dynamics
<i>Period</i>	<i>Obligations</i>		
05/06/63-08/31/84	FY83: \$45,495 TOTAL: \$2,169,055		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Draine, B. T.	HQ-EZ/Stenal, R. E.	11-Astronomy	
	HQ-EZ/Boggeess, N. W.		

<b>NAS 5-26268</b>	<b>Princeton University</b>	<b>3547</b>	Design, development and fabrication of interstella medium absorption profile spectrograph experiment
<i>Period</i>	<i>Obligations</i>		
08/21/80-09/30/84	FY83: \$122,000 TOTAL: \$1,243,281		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Jenkins, E. B.	GSFC/Cyphers, H.	11-Astronomy	

<b>NGL 31-001-252</b>	<b>Princeton University</b>	<b>3554</b>	Air traffic control technology
<i>Period</i>	<i>Obligations</i>		
11/15/71-01/31/86	FY83: \$35,000 TOTAL: \$803,333		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Stengel, R. F.	LARC/Howell, W. E.	41-Aero Engr	
Sweet, L. M.			

<b>NAS 5-27341</b>	<b>Princeton University</b>	<b>3548</b>	Studies of polar motion, Earth rotation and plate motions
<i>Period</i>	<i>Obligations</i>		
08/20/82-08/20/84	FY83: TOTAL: \$76,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Morgan, W. J.	GSFC/Mead, G. D.	32-Geological Sci	

<b>NGT 31-001-800</b>	<b>Princeton University</b>	<b>3555</b>	Graduate student researchers program
<i>Period</i>	<i>Obligations</i>		
09/01/81-12/31/83	FY83: TOTAL: \$23,848		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bryan, K.	HQ-LB/Owens, F. C.	31-Atmos Sci	

<b>NAS 5-27590</b>	<b>Princeton University</b>	<b>3549</b>	Provide pre-launch science data requirements and post launch data analysis for COBE
<i>Period</i>	<i>Obligations</i>		
05/31/83-12/31/89	FY83: \$42,150 TOTAL: \$42,150		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wilkenson, D. T.	GSFC/Mather, J.	11-Astronomy	

<b>NGT 31-001-801</b>	<b>Princeton University</b>	<b>3556</b>	Graduate student researchers program
<i>Period</i>	<i>Obligations</i>		
06/01/82-11/30/83	FY83: \$2,500 TOTAL: \$14,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Fels, S. B.	HQ-LB/Owens, F. C.	32-Geological Sci	

**NASA'S UNIVERSITY PROGRAM  
NEW JERSEY (Continued)**

**NGT 31-001-802** **Princeton University** **3557**  
NASA graduate student researchers program  
*Period* *Obligations*  
05/01/83-04/30/84 FY83: \$13,800 TOTAL: \$13,800  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Perry, M. HQ-LB/Owens, F. C. 13-Physics

**NSG 1587** **Princeton University** **3558**  
Command and stability augmentation techniques for aircraft with control saturation  
*Period* *Obligations*  
01/01/79-10/31/83 FY83: \$31,815 TOTAL: \$102,209  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stengel, R. F. LARC/Schy, A. A. 41-Aero Engr

**NSG 1630** **Princeton University** **3559**  
Preliminary investigation of the external flow analysis for density measurements at high altitude  
*Period* *Obligations*  
07/01/79-08/31/82 FY83: TOTAL: \$164,765  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bienkowski, G. K. LARC/Blanchard, R. C. 41-Aero Engr  
LARC/Jones, J. J.

**NSG 5248** **Princeton University** **3560**  
Observational research on the IUE satellite  
*Period* *Obligations*  
03/01/78-01/31/84 FY83: \$9,300 TOTAL: \$41,512  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jenkins, E. B. GSFC/Kondo, Y. 11-Astronomy  
York, D. G.  
Wu, C. C.

**NSG 7256** **Princeton University** **3561**  
Research in extragalactic astrophysics  
*Period* *Obligations*  
07/01/76-12/31/83 FY83: TOTAL: \$93,960  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bahcall, N. A. HQ-EZ/Weiler, E. J. 11-Astronomy  
HQ-EZ/Boggess, N. W.

**NSG 7280** **Princeton University** **3562**  
The effect of gravity and weightlessness on the development and regeneration of the giant Coenocyte Caulerpa  
*Period* *Obligations*  
10/01/76-11/30/83 FY83: \$27,000 TOTAL: \$322,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jacobs, W. P. HQ-EB/Halstead, T. W. 51-Biological Sci

**NSG 7302** **Princeton University** **3563**  
New radiometers for balloon 3 K isotropy experiment  
*Period* *Obligations*  
11/15/76-12/31/83 FY83: \$32,000 TOTAL: \$197,811  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wilkinson, D. T. HQ-EZ/Boggess, N. W. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NSG 7568** **Princeton University** **3564**  
The geomorphic role of water/ice on Mars  
*Period* *Obligations*  
03/15/79-01/31/83 FY83: TOTAL: \$92,063  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Judson, S. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NSG 7618** **Princeton University** **3565**  
Photon counting image sensor development for astronomical applications  
*Period* *Obligations*  
07/01/79-09/14/84 FY83: \$41,047 TOTAL: \$389,674  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jenkins, E. B. HQ-EZ/Weiler, E. J. 11-Astronomy  
HQ-EZ/Boggess, N. W.

**NAG 5-70** **Rutgers University - New Brunswick** **3566**  
Observation of ultraviolet emission from globular clusters  
*Period* *Obligations*  
06/01/80-07/31/83 FY83: TOTAL: \$27,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Matilsky, T. GSFC/Kondo, Y. 11-Astronomy

**NAG 8-454** **Rutgers University - New Brunswick** **3567**  
Statistical analyses of the X-ray sky using the HEAO A-1 database  
*Period* *Obligations*  
07/01/83-06/30/84 FY83: \$20,653 TOTAL: \$20,653  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Matilsky, T. MSFC/Stone, J. F. 11-Astronomy

**NAG 9-26** **Rutgers University - New Brunswick** **3568**  
Beryllium isotopes in meteorites  
*Period* *Obligations*  
02/01/83-01/31/84 FY83: \$20,700 TOTAL: \$20,700  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Herzog, G. F. JSC/Dietrich, J. W. 11-Astronomy

**NAG 9-35** **Rutgers University - New Brunswick** **3569**  
Metal-silicate relationships in differentiated meteorites  
*Period* *Obligations*  
02/01/83-01/31/84 FY83: \$25,060 TOTAL: \$25,060  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hewins, R. H. JSC/Dietrich, J. W. 32-Geological Sci

**NAGW 142** **Rutgers University - New Brunswick** **3570**  
Beryllium isotopes in meteorites  
*Period* *Obligations*  
03/01/81-02/28/84 FY83: TOTAL: \$52,400  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Herzog, G. F. HQ-EL/Taylor, L. A. 32-Geological Sci  
HQ-EL/Quaide, W. L.

# **NASA'S UNIVERSITY PROGRAM** **NEW JERSEY (Continued)**

**NAGW 177 Rutgers University - New Brunswick 3571**  
Olivine-magna density relations at high pressure and its bearing on the differentiation of the terrestrial planets

Period	Obligations	
04/01/81-04/30/84	FY83: \$16,419	TOTAL: \$38,671
Prin. Invest.	NASA Tech. Officer	CASE Category
Herzberg, C. T.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

**NSG 7327 Rutgers University - New Brunswick 3572**  
Research and studies of metal silicate relationships in howardite breccias

Period	Obligations	
02/01/77-01/31/84	FY83:	TOTAL: \$171,144
Prin. Invest.	NASA Tech. Officer	CASE Category
Hewins, R. H.	HQ-EL/Taylor, L. A.	32-Geological Sci
	HQ-EL/Quaide, W. L.	

**NSG 7601 Rutgers University - New Brunswick 3573**  
Convection in spherical shells

Period	Obligations	
03/15/79-08/31/82	FY83:	TOTAL: \$58,572
Prin. Invest.	NASA Tech. Officer	CASE Category
Zebib, A.	HQ-EL/Boyce, J. M.	32-Geological Sci

**NSG 9065 Rutgers University - New Brunswick 3574**  
Flow behavior of extraterrestrial materials

Period	Obligations	
02/01/78-05/31/83	FY83:	TOTAL: \$90,335
Prin. Invest.	NASA Tech. Officer	CASE Category
Klein, L. C.	JSC/Warner, J. L.	32-Geological Sci

**NAG 1-213 Stevens Institute of Technology 3575**  
Development of disturbances in a growing boundary layer

Period	Obligations	
09/02/81-01/31/83	FY83:	TOTAL: \$78,554
Prin. Invest.	NASA Tech. Officer	CASE Category
Salwen, H.	LARC/Dagenhart, J. R.	
Grosch, C. E.	29-Math/Cmputer, NEC	

**NAG 3-47 Stevens Institute of Technology 3576**  
The influence of gyroscopic forces of the dynamic behavior and flutter of rotating blades

Period	Obligations	
06/01/80-08/31/83	FY83:	TOTAL: \$157,220
Prin. Invest.	NASA Tech. Officer	CASE Category
Sisto, F.	LERC/Kielb, R. E.	46-Mech Engr
Chang, A.		

**NAG 5-371 Stevens Institute of Technology 3577**  
Process control and communication for data-base unification

Period	Obligations	
09/15/83-09/14/84	FY83: \$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Sack, I. H.	GSFC/Smith, P. H.	22-Computer Science
	GSFC/Berbert, J. J.	

## **NEW MEXICO**

**NAG 8-394 New Mexico Institute of Mining & Tech 3578**  
A radio survey of coronal X-ray stars

Period	Obligations	
06/25/81-09/24/82	FY83:	TOTAL: \$5,715
Prin. Invest.	NASA Tech. Officer	CASE Category
Gibson, D. M.	MSFC/Stone, J. F.	11-Astronomy
Fisher, P.		

**NAGW 378 New Mexico Institute of Mining & Tech 3579**  
Funding for the sixth international symposium on environmental biogeochemistry

Period	Obligations	
10/01/82-12/31/83	FY83: \$5,000	TOTAL: \$5,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Brierley, J. A.	HQ-EB/Geib, D. S.	51-Biological Sci
	HQ-EB/Devincenzi, D. L.	

**NAS 8-33817 New Mexico Institute of Mining & Tech 3580**  
Night-time/day-time orbital survey of lightning experiment support

Period	Obligations	
04/01/80-02/28/84	FY83: \$20,000	TOTAL: \$63,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Brooks, M.	MSFC/Vaughan, O. H.	31-Atmos Sci
	MSFC/Christian, H. J.	

**NCA 2-51101 New Mexico Institute of Mining & Tech 3581**  
Photon and particle transfer in the compact radiation source in active galactic nuclei

Period	Obligations	
03/01/81-02/28/83	FY83:	TOTAL: \$13,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Eilek, J. A.	ARC/Caroff, L. J.	11-Astronomy

**NCA 2-511301 New Mexico Institute of Mining & Tech 3582**  
Comparison of optically thick compact source spectra with observations

Period	Obligations	
04/15/83-03/14/84	FY83: \$9,000	TOTAL: \$9,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Eilek, J. A.	ARC/Caroff, L. J.	11-Astronomy

**NCA 5-71 New Mexico Institute of Mining & Tech 3583**  
Cometary and astrophysical research activities

Period	Obligations	
11/01/76-09/30/83	FY83: \$20,000	TOTAL: \$141,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Donaruma, L. G.	GSFC/Michalitsianos, A.	11-Astronomy
Holmes, C. R.		

**NAGW 110 New Mexico State University - Las Cruces 3584**  
Continuation of a cosmic ray research program using a superconducting magnet spectrometer

Period	Obligations	
08/01/80-04/30/84	FY83: \$84,955	TOTAL: \$347,551
Prin. Invest.	NASA Tech. Officer	CASE Category
Golden, R. L.	HQ-EZ/Kaluziński, L. J.	11-Astronomy
	HQ-EZ/Opp, A. G.	

**NASA'S UNIVERSITY PROGRAM  
NEW MEXICO (Continued)**

**NAGW 167 New Mexico State University - Las Cruces 3585**

Analysis of Jovian atmospheric motions

Period	Obligations	
04/01/81-05/31/84	FY83: \$11,102	TOTAL: \$86,102
Prin. Invest.	NASA Tech. Officer	CASE Category
Beebe, R. F.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Evans, N.	

**NAS 5-26332 New Mexico State University - Las Cruces 3586**

Field and analytical engineering support for the sounding rocket program

Period	Obligations	
09/10/80-12/31/83	FY83: \$1,673,346	TOTAL: \$4,793,833
Prin. Invest.	NASA Tech. Officer	CASE Category
Lawrence, H.	GSFC/Pincus, B. R.	49-Engr, NEC
Connell, H.	GSFC/Cameron, J. W.	

**NAS 5-26662 New Mexico State University - Las Cruces 3587**

Provide developmental and technological support for the ultraviolet imaging telescope (UIT) shuttle electronics

Period	Obligations	
08/12/81-08/15/88	FY83: \$285,942	TOTAL: \$441,401
Prin. Invest.	NASA Tech. Officer	CASE Category
Gilcrease, A.	GSFC/Blum, A.	45-Elec Engr

**NAS 9-95514 New Mexico State University - Las Cruces 3588**

Development of a remotely sensed and ground data base in the Northern Great Plains for the study of salt affected soils

Period	Obligations	
04/06/81-04/30/82	FY83:	TOTAL: \$99,950
Prin. Invest.	NASA Tech. Officer	CASE Category
Carver, K. R.	JSC/Farris, G. W.	39-Env Sci, NEC
Chaturvedi, L.		

**NAS 9-95519 New Mexico State University - Las Cruces 3589**

Synthetic aperture radar antenna trade-off study

Period	Obligations	
06/30/81-05/01/84	FY83: \$40,000	TOTAL: \$67,990
Prin. Invest.	NASA Tech. Officer	CASE Category
Blevins, B.	JSC/Nitschke, H. A.	39-Env Sci, NEC

**NAS 9-95522 New Mexico State University - Las Cruces 3590**

Provide analysis, evaluation and testing for SAR antenna expanded capability to obtain data for Earth observation applications as a part of an SAR payload on the shuttle

Period	Obligations	
09/24/81-11/30/82	FY83:	TOTAL: \$106,668
Prin. Invest.	NASA Tech. Officer	CASE Category
Waterman, A.	JSC/Nitschke, H. A.	39-Env Sci, NEC

**NAS 9-95539 New Mexico State University - Las Cruces 3591**

Identification of sensor parameters for an operational saline seep monitoring system

Period	Obligations	
04/30/82-04/01/83	FY83:	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Carver, K. R.	JSC/Pels, G. F.	39-Env Sci, NEC
Chaturvedi, L.		
Hancock, G.		

**NAS 9-95541 New Mexico State University - Las Cruces 3592**

Study to determine distributed SAR architecture antenna configurations

Period	Obligations	
07/21/82-10/31/83	FY83:	TOTAL: \$59,868
Prin. Invest.	NASA Tech. Officer	CASE Category
Blevins, B.	JSC/Nitschke, H. A.	39-Env Sci, NEC

**NAS 9-95557 New Mexico State University - Las Cruces 3593**

Shuttle ku-band radar flight test support at WSMR

Period	Obligations	
07/15/83-09/30/83	FY83: \$14,913	TOTAL: \$14,913
Prin. Invest.	NASA Tech. Officer	CASE Category
Unavailable	JSC/Lapoint, D. A.	39-Env Sci, NEC

**NGL 32-003-001 New Mexico State University - Las Cruces 3594**

Photographic patrol and study of physical conditions on the Moon and planets

Period	Obligations	
04/15/61-09/30/84	FY83: \$45,000	TOTAL: \$2,166,250
Prin. Invest.	NASA Tech. Officer	CASE Category
Beebe, R. F.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Brinton, H. C.	

**NSG 7622 New Mexico State University - Las Cruces 3595**

Speed-dependent collision effects on radar back-scattering from the ionosphere

Period	Obligations	
09/01/79-05/30/83	FY83:	TOTAL: \$80,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Theimer, O. H.	HQ-EZ/Lynch, J. T.	19-Phys Sci, NEC

**NAG 1-95 University of New Mexico 3596**

Study of the photovoltaic effect in thin film barium titanate

Period	Obligations	
08/25/80-02/28/83	FY83:	TOTAL: \$103,124
Prin. Invest.	NASA Tech. Officer	CASE Category
Grannemann, W. W.	LARC/Hayes, P. J.	45-Elec Engr

**NAG 3-207 University of New Mexico 3597**

Effects of 3-dimensional cross-flow on compressible boundary layer characteristics, controls and separation

Period	Obligations	
08/15/81-12/30/82	FY83:	TOTAL: \$45,154
Prin. Invest.	NASA Tech. Officer	CASE Category
Chou, D. C.	LERC/Hwang, D. P.	41-Aero Engr

**NASA'S UNIVERSITY PROGRAM  
NEW MEXICO (Continued)**

**NAG 8-386** **University of New Mexico** **3598**  
Radio galaxies in poor Zwicky clusters  
*Period* *Obligations*  
12/08/80-12/07/82 FY83: TOTAL: \$20,442  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Burns, J. O. MSFC/Stone, J. F. 11-Astronomy

**NAG 8-444** **University of New Mexico** **3599**  
A study of X-ray and radio emission in Abell clusters of galaxies  
*Period* *Obligations*  
09/15/82-09/14/83 FY83: \$17,663 TOTAL: \$17,663  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Burns, J. O. MSFC/Stone, J. F. 11-Astronomy

**NAG 9-30** **University of New Mexico** **3600**  
The formation and evolution of stony meteorites  
*Period* *Obligations*  
02/15/83-02/14/84 FY83: \$223,850 TOTAL: \$223,850  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Keil, K. JSC/Dietrich, J. W. 32-Geological Sci

**NASW 3408** **University of New Mexico** **3601**  
Operation of the technology application center at the University of New Mexico  
*Period* *Obligations*  
10/01/80-09/30/83 FY83: \$258,000 TOTAL: \$813,863  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Morain, S. A. HQ-LG/Bivins, R. G. 99-Multi-Discip  
Zink, L. B. HQ-LG/Ault, L. A.

**NGL 32-004-063** **University of New Mexico** **3602**  
Lunar sample analysis  
*Period* *Obligations*  
01/06/71-05/31/83 FY83: TOTAL: \$1,119,938  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Keil, K. JSC/Dietrich, J. W. 12-Chemistry

**NGL 32-004-064** **University of New Mexico** **3603**  
Mineralogy and chemistry of polymict-brecciated stone meteorites  
*Period* *Obligations*  
06/14/71-02/28/84 FY83: TOTAL: \$859,586  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Keil, K. HQ-EL/French, B. M. 32-Geological Sci  
Fodor, R. V. HQ-EL/Quaide, W. L.  
Taylor, G. J.

**NGR 32-004-062** **University of New Mexico** **3604**  
Search for evidence of dynamic process  
*Period* *Obligations*  
06/22/70-04/30/84 FY83: \$30,000 TOTAL: \$326,075  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Elston, W. E. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NGT 32-004-770** **University of New Mexico** **3605**  
A precooperative education program  
*Period* *Obligations*  
07/25/77-07/24/83 FY83: TOTAL: \$79,922  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Robertson, M. HQ-LC/Pohly, J. 49-Engr, NEC

**NSG 7579** **University of New Mexico** **3606**  
Chemical weathering on Mars  
*Period* *Obligations*  
03/01/79-06/30/83 FY83: TOTAL: \$209,187  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Keil, K. HQ-EL/Quaide, W. L. 31-Atmos Sci  
HQ-EL/Boyce, J. M.

**NEW YORK**

**NAG 1-44** **Brooklyn College** **3607**  
Photoelectrolysis of water with surface modified metal oxide electrodes  
*Period* *Obligations*  
03/01/80-08/31/82 FY83: TOTAL: \$67,706  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tomkiewicz, M. LARC/Byvik, C. E. 19-Phys Sci, NEC  
Aronson, S. LARC/Conway, E. J.

**NAG 1-418** **Brooklyn College** **3608**  
Theoretical studies of heavy-ion collisions  
*Period* *Obligations*  
10/01/83-07/15/84 FY83: \$19,000 TOTAL: \$19,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Franco, V. LARC/Townsend, L. W. 13-Physics  
LARC/Conway, E. J.

**NCA 2-75201** **Brooklyn College** **3609**  
Effects of exposure to abnormal G on mitochondrial aging in drosophila and mice  
*Period* *Obligations*  
04/01/82-09/30/83 FY83: \$29,378 TOTAL: \$44,378  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Cottrell, S. F. ARC/Miquel, J. 51-Biological Sci  
ARC/Philpott, D. E.

**NAG 1-6** **City College of New York** **3610**  
An adaptive learning control system for large flexible space structures  
*Period* *Obligations*  
11/01/79-10/31/83 FY83: \$60,000 TOTAL: \$223,545  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Thau, F. E. LARC/Montgomery, R. C. 42-Astro Engr  
LARC/Williams, J. P.

**NAG 1-293** **City College of New York** **3611**  
Measurement of Reynolds stresses in turbulent compressible flow  
*Period* *Obligations*  
08/01/82-09/30/83 FY83: TOTAL: \$150,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Johnson, J. A. LARC/Bushnell, D. M. 41-Aero Engr  
LARC/Weinstein, L. M.

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**NAG 1-377** **City College of New York** **3612**  
The measurement of Reynolds stresses in turbulent compressible flow

Period	Obligations
06/01/83-05/31/84	FY83: \$250,000 TOTAL: \$250,000
Prin. Invest.	NASA Tech. Officer CASE Category
Johnson, J. A., III	LARC/Bushnell, D. M. 41-Aero Engr
	LARC/Hefner, J. N.

**NAG 3-122** **City College of New York** **3613**  
Experimental study of turbulence in blade end wall corner region

Period	Obligations
10/20/80-10/17/83	FY83: \$89,782 TOTAL: \$217,864
Prin. Invest.	NASA Tech. Officer CASE Category
Raj, R.	LERC/Boldman, D. R. 41-Aero Engr

**NAG 3-130** **City College of New York** **3614**  
Relaxation kinetics in organic glasses

Period	Obligations
11/10/80-01/07/84	FY83: \$60,000 TOTAL: \$199,949
Prin. Invest.	NASA Tech. Officer CASE Category
Alfano, R. R.	LERC/Lauver, R. W. 13-Physics

**NAG 3-299** **City College of New York** **3615**  
A study and software simulation of very high data rate channels

Period	Obligations
06/25/82-06/24/83	FY83: TOTAL: \$70,157
Prin. Invest.	NASA Tech. Officer CASE Category
Schilling, D.	LERC/Connolly, D. J. 45-Elec Engr
Ziegler, C.	

**NAG 5-372** **City College of New York** **3616**  
Theoretical research in solar and atmospheric physics

Period	Obligations
10/01/83-03/31/84	FY83: \$10,000 TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer CASE Category
Arons, M.	GSFC/Canuto, V. C. 31-Atmos Sci

**NAGW 22** **City College of New York** **3617**  
A study of the Martian fretted terrains-lightly cratered terrains boundary

Period	Obligations
01/01/80-06/30/83	FY83: TOTAL: \$80,375
Prin. Invest.	NASA Tech. Officer CASE Category
Weiss, D.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NAS 9-16473** **City College of New York** **3618**  
Investigation of digital encoding techniques for television transmission

Period	Obligations
10/01/81-11/30/83	FY83: TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer CASE Category
Schilling, D. L.	JSC/Schadelbauer, S. 45-Elec Engr

**NGL 33-013-040** **City College of New York** **3619**  
Theoretical research in astrophysics and astronomy

Period	Obligations
04/23/69-11/30/84	FY83: TOTAL: \$454,000
Prin. Invest.	NASA Tech. Officer CASE Category
Arons, M.	GSFC/Thaddeus, P. 11-Astronomy
	GSFC/Green, S.

**NSG 2348** **City College of New York** **3620**  
Theoretical problems of spiral galaxies

Period	Obligations
11/01/78-06/30/82	FY83: TOTAL: \$93,761
Prin. Invest.	NASA Tech. Officer CASE Category
Yuan, C.	ARC/Black, D. C. 11-Astronomy

**NAG 3-277** **City Univ of Ny - Grad School & Univ Cen** **3621**  
A computer simulator for a mobile telephone system

Period	Obligations
04/21/82-04/20/83	FY83: TOTAL: \$49,999
Prin. Invest.	NASA Tech. Officer CASE Category
Schilling, D. L.	LERC/May, B. D. 45-Elec Engr
Ziegler, C.	LERC/Salzman, J. A.

**NAGW 266** **City Univ of Ny - Grad School & Univ Cen** **3622**  
Oceanographic and meteorological research based on the data products of seas

Period	Obligations
10/01/81-09/30/83	FY83: \$124,000 TOTAL: \$250,066
Prin. Invest.	NASA Tech. Officer CASE Category
Pierson, W. J.	HQ-EE/McGoldrick, L. F. 33-Oceanography
	HQ-EE/Wilson, W. S.

**NAS 8-34622** **City Univ of Ny - Grad School & Univ Cen** **3623**  
Research study: Theory and modeling of atmospheric turbulence

Period	Obligations
09/01/81-11/08/83	FY83: \$21,741 TOTAL: \$74,981
Prin. Invest.	NASA Tech. Officer CASE Category
Tchen, C. H.	MSFC/Alexander, M. B. 31-Atmos Sci
	MSFC/Fichtl, G. H.

**NSG 5334** **City Univ of Ny - Grad School & Univ Cen** **3624**  
Relativistic effects in atoms

Period	Obligations
02/01/79-11/30/82	FY83: TOTAL: \$61,979
Prin. Invest.	NASA Tech. Officer CASE Category
Mittleman, M. H.	GSFC/Temkin, A. 13-Physics

**NAG 1-284** **Clarkson College of Technology** **3625**  
Material characterization of structural adhesives in the lap shear mode

Period	Obligations
06/01/82-01/31/84	FY83: TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer CASE Category
Sancaktak, E.	LARC/Johnson, W. S. 46-Mech Engr
	LARC/StClair, T. L.

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<b>NAG 1-397</b> <b>Clarkson College of Technology</b> <b>3626</b> Bridgman crystal growth <i>Period</i> 08/05/83-06/04/84 <i>Obligations</i> FY83: \$36,537      TOTAL: \$36,537 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Carlson, F. M.      LARC/Fripp, A. L.      47-Materials Engr LARC/Crouch, R. K.	<b>NAS 8-34891</b> <b>Clarkson College of Technology</b> <b>3633</b> Modelling directional solidification <i>Period</i> 06/01/82-05/31/85 <i>Obligations</i> FY83: \$86,000      TOTAL: \$126,000 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Wilcox, W. R.      MSFC/Moore, W. W., Jr.      19-Phys Sci, NEC Papatheodorou, T.
<b>NAG 3-145</b> <b>Clarkson College of Technology</b> <b>3627</b> Adhesion of ice from helicopter rotor blades and aircraft wings <i>Period</i> 12/29/80-03/27/83 <i>Obligations</i> FY83:      TOTAL: \$135,361 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Jellinek, H. H.      LERC/Schmidt, H.      12-Chemistry	<b>NAG 1-355</b> <b>Columbia University</b> <b>3634</b> Intrinsic adaptive mesh techniques <i>Period</i> 04/01/83-10/31/83 <i>Obligations</i> FY83: \$50,000      TOTAL: \$50,000 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Eiseman, P. R.      LARC/Harris, J. E.      41-Aero Engr Chu, C. K.      LARC/Dwoyer, D. L.
<b>NAG 3-238</b> <b>Clarkson College of Technology</b> <b>3628</b> Electrocatalysis of fuel cell reactions: Investigations of alternate electrolytes <i>Period</i> 01/01/82-12/30/83 <i>Obligations</i> FY83:      TOTAL: \$33,622 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Chin, D. T.      LERC/Lauver, M. R.      19-Phys Sci, NEC	<b>NAG 3-15</b> <b>Columbia University</b> <b>3635</b> A preliminary in vivo study of the effects of electric stimulation on bone ingrowth to textured surfaces of orthopedic implants <i>Period</i> 12/01/79-11/30/81 <i>Obligations</i> FY83:      TOTAL: \$25,412 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Pawluk, R. J.      LERC/Wintucky, E. G.      56-Medical Sciences
<b>NAS 8-32944</b> <b>Clarkson College of Technology</b> <b>3629</b> Experiment for materials processing in space, physical phenomena in containerless glass processing <i>Period</i> 02/23/78-12/27/85 <i>Obligations</i> FY83: \$110,000      TOTAL: \$674,502 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Subramanian, R. S.      MSFC/Fallon, R. A.      13-Physics Cole, R.      MSFC/Johnson, J. L.	<b>NAG 3-57</b> <b>Columbia University</b> <b>3636</b> The role of cobalt in nickel base superalloys <i>Period</i> 07/01/80-09/29/84 <i>Obligations</i> FY83: \$159,118      TOTAL: \$526,434 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Tien, J. K.      LERC/Scheuermann, C. M.      47-Materials Engr
<b>NAS 8-34308</b> <b>Clarkson College of Technology</b> <b>3630</b> Chairmanship of the science and engineering advisory board for the solidification experiment system project <i>Period</i> 01/05/81-02/04/82 <i>Obligations</i> FY83:      TOTAL: \$28,533 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Wilcox, W. R.      MSFC/Adams, W. R.      19-Phys Sci, NEC MSFC/Landers, J. C.	<b>NAG 3-410</b> <b>Columbia University</b> <b>3637</b> Understanding compatibility in tungsten fiber reinforced composites <i>Period</i> 04/01/83-09/30/84 <i>Obligations</i> FY83: \$82,956      TOTAL: \$82,956 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Tien, J. K.      LERC/Petrasek, D. W.      47-Materials Engr LERC/Signorelli, R. A.
<b>NAS 8-34750</b> <b>Clarkson College of Technology</b> <b>3631</b> Age related studies of baroclinic flows <i>Period</i> 05/28/82-10/27/83 <i>Obligations</i> FY83:      TOTAL: \$29,951 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Hyun, J.      MSFC/Fowles, W. W.      31-Atmos Sci MSFC/Leslie, F.	<b>NAG 5-98</b> <b>Columbia University</b> <b>3638</b> Research of the relationship between gravity and bathymetry in the Pacific Ocean <i>Period</i> 10/01/80-09/30/81 <i>Obligations</i> FY83:      TOTAL: \$50,000 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Watts, T. S.      GSFC/Welker, J.      32-Geological Sci GSFC/Smith, D. E.
<b>NAS 8-34887</b> <b>Clarkson College of Technology</b> <b>3632</b> Eutectic solidification study <i>Period</i> 05/03/82-05/02/84 <i>Obligations</i> FY83: \$35,000      TOTAL: \$65,000 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Wilcox, W. R.      MSFC/Reeves, F. A.      47-Materials Engr	<b>NAG 5-618</b> <b>Columbia University</b> <b>3639</b> X-ray astronomy <i>Period</i> 02/01/83-01/31/84 <i>Obligations</i> FY83: \$300,000      TOTAL: \$300,000 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Novick, R.      GSFC/Early, L. J.      13-Physics Chanan, G. A.      GSFC/Pless, R. H.



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<b>NAG 8-425</b>	<b>Columbia University</b>	<b>3640</b>	Bipolar nebulae observational group III F	
Period 01/01/82-12/31/82	FY83:	Obligations	TOTAL: \$6,011	
Prin. Invest. Morris, M.	NASA Tech. Officer MSFC/Stone, J. F.	CASE Category 11-Astronomy		
<b>NAGW 18</b>	<b>Columbia University</b>	<b>3641</b>	Reduction and analysis of stellar X-ray spectral and polarimetric data obtained with the Columbia University orbiting solar observatory 8	
Period 10/01/79-10/01/82	FY83:	Obligations	TOTAL: \$60,000	
Prin. Invest. Novick, R.	NASA Tech. Officer HQ-EZ/Kaluzienski, L. J.	CASE Category 11-Astronomy		
<b>NAGW 238</b>	<b>Columbia University</b>	<b>3642</b>	Studies of bone and cartilage during periods of simulated weightlessness	
Period 08/15/81-11/30/83	FY83:	Obligations	TOTAL: \$118,023	
Prin. Invest. Doty, S. B.	NASA Tech. Officer HQ-EB/Halstead, T. W.	CASE Category 51-Biological Sci		
<b>NAGW 346</b>	<b>Columbia University</b>	<b>3643</b>	Effects of simulated weightlessness on meiosis fertilization and early development in mice	
Period 07/01/82-10/31/84	FY83: \$74,926	Obligations	TOTAL: \$123,808	
Prin. Invest. Wolgemuth, D. J.	NASA Tech. Officer HQ-EB/Halstead, T. W.	CASE Category 51-Biological Sci		
<b>NAS 5-24457</b>	<b>Columbia University</b>	<b>3644</b>	Solar flare X-ray polarimeter experiment	
Period 02/22/78-12/01/83	FY83: \$51,834	Obligations	TOTAL: \$1,455,324	
Prin. Invest. Novick, R.	NASA Tech. Officer GSFC/Eiband, A. M.	CASE Category 11-Astronomy		
<b>NAS 5-26398</b>	<b>Columbia University</b>	<b>3645</b>	Technical services and materials for the library of Goddard Institute for Space Studies	
Period 11/01/80-10/30/81	FY83:	Obligations	TOTAL: \$69,855	
Prin. Invest. Yavarkousky, J. H.	NASA Tech. Officer GSFC/Jennings, N.	CASE Category 13-Physics		
<b>NAS 5-27237</b>	<b>Columbia University</b>	<b>3646</b>	A plan for VLBI measurements in Alaska to determine plate convergence	
Period 08/06/82-11/06/83	FY83:	Obligations	TOTAL: \$23,466	
Prin. Invest. Johnson, T. L. Beavan, J. Bilham, R.	NASA Tech. Officer GSFC/Mead, G. D.	CASE Category 32-Geological Sci		
<b>NAS 5-27239</b>	<b>Columbia University</b>	<b>3647</b>	Research investigation entitled 'SAFE II'	
Period 08/10/82-08/10/83	FY83:	Obligations	TOTAL: \$20,590	
Prin. Invest. Scholz, C. H.	NASA Tech. Officer GSFC/Mead, G. D.	CASE Category 32-Geological Sci		
<b>NAS 8-30753</b>	<b>Columbia University</b>	<b>3648</b>	Design, development and operation of the HEAO mission B X-ray telescope experiment	
Period 06/01/74-09/30/84	FY83: \$331,826	Obligations	TOTAL: \$1,503,737	
Prin. Invest. Novick, R.	NASA Tech. Officer MSFC/Stone, J. F.	CASE Category 11-Astronomy		
<b>NAS 8-34713</b>	<b>Columbia University</b>	<b>3649</b>	Scientific support in the development, integration mission support and data analysis of the tribology experiment in zero gravity (TEZG)	
Period 07/01/82-06/30/84	FY83: \$28,581	Obligations	TOTAL: \$48,291	
Prin. Invest. Pan, C. H.	NASA Tech. Officer MSFC/Jones, C. T., III	CASE Category 19-Phys Sci, NEC		
<b>NCA 2-172101</b>	<b>Columbia University</b>	<b>3650</b>	Cellular and subcellular characteristics of bone following space-flight	
Period 11/01/80-10/31/82	FY83:	Obligations	TOTAL: \$44,970	
Prin. Invest. Doty, S. B.	NASA Tech. Officer ARC/Holton, E. M.	CASE Category 51-Biological Sci		
<b>NCA 2-172102</b>	<b>Columbia University</b>	<b>3651</b>	Biotelemetric analysis of pediatric long-bone reconstruction	
Period 05/15/81-02/14/84	FY83:	Obligations	TOTAL: \$32,000	
Prin. Invest. Pawluk, R. J. Dick, H. M.	NASA Tech. Officer ARC/Young, D. R.	CASE Category 56-Medical Sciences		
<b>NCC 1-5</b>	<b>Columbia University</b>	<b>3652</b>	The influence of auditory inputs on simulated flight operations	
Period 04/15/79-11/30/83	FY83:	Obligations	TOTAL: \$194,974	
Prin. Invest. Galanter, E.	NASA Tech. Officer LARC/Harris, R. L., Sr.	CASE Category 41-Aero Engr		
<b>NCC 1-59</b>	<b>Columbia University</b>	<b>3653</b>	Development of mesh generation software system with interactive computer graphics	
Period 12/01/81-11/30/83	FY83: \$30,000	Obligations	TOTAL: \$55,000	
Prin. Invest. Eiseman, P. R. Chu, C. K.	NASA Tech. Officer LARC/Smith, R. E.	CASE Category 29-Math/Computer, NEC	LARC/Shoosmith, J. N.	

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<b>NCC 5-16</b>		<b>Columbia University</b>	<b>3654</b>
Multidisciplinary research in space science			
<i>Period</i>	<i>Obligations</i>		
05/15/79-12/31/83	FY83: \$496,931	TOTAL: \$2,326,859	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Broecker, W. S.	GSFC/Travis, L.	31-Atmos Sci	
Flynn, G. W.	GSFC/Kerr, A. R.		
<b>NSG 7105</b>		<b>Columbia University</b>	<b>3661</b>
Calculation of collision cross sections of astrophysical interest			
<i>Period</i>	<i>Obligations</i>		
12/01/74-12/31/83	FY83: \$37,928	TOTAL: \$323,928	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Flynn, G.	HQ-EZ/Boggess, N. W.	11-Astronomy	
	HQ-EZ/Weiler, E. J.		
<b>NCC 5-20</b>		<b>Columbia University</b>	<b>3655</b>
Application of digital analysis of multi-spectral scanner to agro-environmental studies			
<i>Period</i>	<i>Obligations</i>		
01/01/80-09/30/83	FY83: \$27,849	TOTAL: \$306,800	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lewis, R. A.	GSFC/Ungar, S. G.	32-Geological Sci	
<b>NSG 7200</b>		<b>Columbia University</b>	<b>3662</b>
Rare-earth element abundance studies in chondrite meteorites			
<i>Period</i>	<i>Obligations</i>		
03/01/76-10/31/83	FY83:	TOTAL: \$133,907	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
O'nions, R. K.	HQ-EL/French, B. M.	32-Geological Sci	
Ridley, W. I.	HQ-EL/Quaide, W. L.		
Evenson, N. M.			
<b>NCC 5-28</b>		<b>Columbia University</b>	<b>3656</b>
Molecular astrophysics and high frequency detector development			
<i>Period</i>	<i>Obligations</i>		
09/01/83-08/31/84	FY83: \$95,238	TOTAL: \$95,238	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Flynn, G. W.	GSFC/Green, S.	19-Phys Sci, NEC	
<b>NAG 1-18</b>		<b>Cooper Union College</b>	<b>3663</b>
A comprehensive model to determine the effects of temperature and species fluctuations on reaction rates in turbulent reacting flows			
<i>Period</i>	<i>Obligations</i>		
02/01/79-01/31/84	FY83: \$36,853	TOTAL: \$138,585	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Chinitz, W. C.	LARC/Evans, J. S.	21-Mathematics	
	LARC/Rogers, R. C.		
<b>NCC 5-29</b>		<b>Columbia University</b>	<b>3657</b>
Atmospheric, climatic and environmental research			
<i>Period</i>	<i>Obligations</i>		
10/01/83-12/31/83	FY83: \$131,004	TOTAL: \$131,004	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Broecker, W. S.	GSFC/Travis, L. D.	31-Atmos Sci	
Fung, I.			
<b>NAG 1-107</b>		<b>Cornell University</b>	<b>3664</b>
Non-impulsive rotor noise analyses experiments			
<i>Period</i>	<i>Obligations</i>		
11/01/80-06/30/83	FY83:	TOTAL: \$69,901	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
George, A. R.	LARC/Farassat, F.	41-Aero Engr	
	LARC/Brooks, T. F.		
<b>NGR 33-008-102</b>		<b>Columbia University</b>	<b>3658</b>
Research in X-ray astronomy			
<i>Period</i>	<i>Obligations</i>		
01/30/68-12/31/83	FY83:	TOTAL: \$3,004,942	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Novick, R.	GSFC/Early, L. J.	11-Astronomy	
Ku, W. H.			
Long, K. S.			
<b>NSG 1450</b>		<b>Columbia University</b>	<b>3659</b>
Aircraft cabin noise, prediction and optimization			
<i>Period</i>	<i>Obligations</i>		
09/06/77-01/05/84	FY83: \$70,069	TOTAL: \$359,306	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Vaicaitis, R.	LARC/Mixson, J. S.	41-Aero Engr	
	LARC/Stephens, D. G.		
<b>NSG 1550</b>		<b>Columbia University</b>	<b>3660</b>
Time-of-day effects on the numerical representation of community response to noise			
<i>Period</i>	<i>Obligations</i>		
07/01/78-09/30/82	FY83:	TOTAL: \$218,935	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Galanter, E.	LARC/Stephens, D. G.	49-Engr, NEC	
<b>NAG 1-208</b>		<b>Cornell University</b>	<b>3665</b>
Gallium indium arsenic double heterostructure laser grown by molecular beam epitaxial			
<i>Period</i>	<i>Obligations</i>		
08/15/81-03/15/83	FY83:	TOTAL: \$53,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Eastman, L. F.	LARC/Magee, C. J.	45-Elec Engr	
Wood, C. E.	LARC/Hendricks, H. D.		
<b>NAG 1-376</b>		<b>Cornell University</b>	<b>3666</b>
Helicopter tail rotor noise			
<i>Period</i>	<i>Obligations</i>		
07/01/83-06/30/84	FY83: \$44,583	TOTAL: \$44,583	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
George, A. R.	LARC/Farassat, F.	41-Aero Engr	
	LARC/Brooks, T. F.		
<b>NAG 2-13</b>		<b>Cornell University</b>	<b>3667</b>
Analysis of transonic flow past helicopter rotors			
<i>Period</i>	<i>Obligations</i>		
01/01/80-10/31/83	FY83: \$15,585	TOTAL: \$53,222	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Caughy, D. A.	ARC/Tauber, M. E.	41-Aero Engr	

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<b>NAG 2-158</b>			<b>Cornell University</b>	<b>3668</b>
Ultrapressure materials science				
<i>Period</i>		<i>Obligations</i>		
01/01/82-12/31/83	FY83: \$50,000	TOTAL: \$150,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Ruoff, A. L.	ARC/Nelson, H. G.	47-Materials Engr		
<b>NAG 2-159</b>			<b>Cornell University</b>	<b>3669</b>
Astrophysical materials science theory				
<i>Period</i>		<i>Obligations</i>		
12/01/81-12/31/83	FY83: \$15,000	TOTAL: \$65,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Ashcroft, N. W.	ARC/Nelson, H. G.	47-Materials Engr		
<b>NAG 2-177</b>			<b>Cornell University</b>	<b>3670</b>
Long-wavelength photoconductive detectors for airborne and orbital infrared astronomy				
<i>Period</i>		<i>Obligations</i>		
03/01/82-06/30/83	FY83: \$13,000	TOTAL: \$23,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Houck, J. R.	ARC/McCreight, C. R.	13-Physics		
Briotta, D. A.	ARC/Goebel, J. H.			
<b>NAG 2-207</b>			<b>Cornell University</b>	<b>3671</b>
Medium and high resolution infrared spectroscopy from the G. P. Kuiper Airborne Observatory				
<i>Period</i>		<i>Obligations</i>		
11/01/82-10/31/83	FY83: \$130,000	TOTAL: \$130,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Houck, J. R.	ARC/Haughney, L. C.	11-Astronomy		
<b>NAG 2-218</b>			<b>Cornell University</b>	<b>3672</b>
Rotational transonic flow past helicopter rotors				
<i>Period</i>		<i>Obligations</i>		
02/01/83-01/31/84	FY83: \$30,330	TOTAL: \$30,330		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Caughey, D. A.	ARC/Tauber, M. E.	41-Aero Engr		
<b>NAG 3-19</b>			<b>Cornell University</b>	<b>3673</b>
Analysis of rotational, transonic flows in turbomachinery				
<i>Period</i>		<i>Obligations</i>		
01/01/80-10/31/83	FY83: \$55,000	TOTAL: \$230,280		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Caughey, D. A.	LERC/Johnson, G. M.	41-Aero Engr		
<b>NAG 3-104</b>			<b>Cornell University</b>	<b>3674</b>
Analysis of wind energy systems				
<i>Period</i>		<i>Obligations</i>		
09/22/80-09/20/82	FY83:	TOTAL: \$53,580		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Thomas, R. J.	LERC/Gilbert, L. J.	45-Elec Engr		
<b>NAG 3-293</b>			<b>Cornell University</b>	<b>3675</b>
Bacteriorhodopsin solar cell: An electricity and hydrogen producing advanced system for powering spacecraft				
<i>Period</i>		<i>Obligations</i>		
06/05/82-06/04/83	FY83:	TOTAL: \$70,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Lewis, A.	LERC/Bents, D. J.	49-Engr, NEC		
<b>NAG 3-349</b>			<b>Cornell University</b>	<b>3676</b>
Stall recovery research				
<i>Period</i>		<i>Obligations</i>		
11/15/82-11/14/83	FY83: \$71,185	TOTAL: \$71,185		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Moore, F. K.	LERC/Eid, L. R.	41-Aero Engr		
<b>NAG 3-395</b>			<b>Cornell University</b>	<b>3677</b>
Interactive graphical color display of three dimensional seal-flow behavior				
<i>Period</i>		<i>Obligations</i>		
03/01/83-02/28/84	FY83: \$33,965	TOTAL: \$33,965		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Abel, J. F.	LERC/Hendricks, R. C.	46-Mech Engr		
Greenberg, D. P.				
Ingraffea, A. R.				
<b>NAG 5-319</b>			<b>Cornell University</b>	<b>3678</b>
Mechanisms of crustal deformation in the western United States				
<i>Period</i>		<i>Obligations</i>		
05/15/83-05/14/84	FY83: \$21,000	TOTAL: \$21,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Turcott, D.	GSFC/Welker, J. E.	32-Geological Sci		
<b>NAG 5-601</b>			<b>Cornell University</b>	<b>3679</b>
Interferometric phase velocity measurements of plasma waves in the Earth's ionosphere				
<i>Period</i>		<i>Obligations</i>		
02/01/82-01/31/84	FY83: \$72,184	TOTAL: \$97,279		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Kintner, P. M.	GSFC/Early, L. J.	13-Physics		
Kelley, M. C.	GSFC/Pless, R. H.			
<b>NAGW 3</b>			<b>Cornell University</b>	<b>3680</b>
The amyloplast as a gravity sensing device in plants				
<i>Period</i>		<i>Obligations</i>		
10/01/79-03/31/84	FY83: \$46,170	TOTAL: \$186,170		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Leopold, A. C.	HQ-EB/Halstead, T. W.	51-Biological Sci		
<b>NAGW 90</b>			<b>Cornell University</b>	<b>3681</b>
Theoretical studies of plasma convection and magnetic field reconnection in the Sun and in the Earth's magnetosphere				
<i>Period</i>		<i>Obligations</i>		
06/01/80-05/31/84	FY83: \$170,000	TOTAL: \$482,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Sudan, R. N.	HQ-EE/Butler, D. M.	13-Physics		
	HQ-EE/Birmingham, T. J.			
<b>NAGW 111</b>			<b>Cornell University</b>	<b>3682</b>
A study of particle size sorting in Martian wind streaks				
<i>Period</i>		<i>Obligations</i>		
11/01/80-11/30/83	FY83: \$25,000	TOTAL: \$75,040		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Thomas, P. C.	HQ-EL/Boyce, J. M.	32-Geological Sci		
	HQ-EL/Holt, H. E.			

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**NAGW 116** **Cornell University** **3683**  
Radar investigation of asteroids  
*Period* *Obligations*  
11/01/80-07/31/84 FY83: \$26,700 TOTAL: \$86,650  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ostro, S. J. HQ-EL/Brunk, W. E. 11-Astronomy  
HQ-EL/Murphy, R. E.

**NAGW 193** **Cornell University** **3684**  
Sulfur in the Jovian satellite system  
*Period* *Obligations*  
04/01/81-06/30/84 FY83: \$55,000 TOTAL: \$157,120  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Veverka, J. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/Boyce, J. M.

**NAGW 310** **Cornell University** **3685**  
Studies of planetary rings  
*Period* *Obligations*  
04/01/82-04/30/84 FY83: \$58,300 TOTAL: \$87,400  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Burns, J. A. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 362** **Cornell University** **3686**  
Stratospheric dynamics-observational studies  
*Period* *Obligations*  
06/01/82-05/31/83 FY83: TOTAL: \$83,475  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Farley, D. T. HQ-EE/Chandra, S. 31-Atmos Sci  
HQ-EE/Watson, R. T.

**NAGW 392** **Cornell University** **3687**  
Dynamics of co-orbital satellites and asteroids  
*Period* *Obligations*  
11/01/82-10/31/84 FY83: \$76,340 TOTAL: \$76,340  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dermott, S. F. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 493** **Cornell University** **3688**  
Template reactions and chemical evolution  
*Period* *Obligations*  
07/01/83-11/01/83 FY83: \$17,100 TOTAL: \$17,100  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Usher, D. A. HQ-EB/Devincenzi, D. L. 12-Chemistry  
HQ-EB/Rambler, M.

**NAS 5-23236** **Cornell University** **3689**  
Feasibility study for infrared interferometer, spectrometer, and  
radiometer for Mariner/Jupiter 1977 launch  
*Period* *Obligations*  
05/01/73-09/30/86 FY83: \$18,000 TOTAL: \$131,300  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gierasch, P. J. GSFC/Conrath, B. J. 13-Physics

**NAS 5-27232** **Cornell University** **3690**  
Space based measurements of crustal deformation in the U.S.  
*Period* *Obligations*  
07/15/82-07/15/84 FY83: \$50,000 TOTAL: \$75,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Oliver, J. GSFC/Mead, G. D. 32-Geological Sci

**NAS 5-27340** **Cornell University** **3691**  
Correlation of data on strain accumulation adjacent to the San  
Andreas Fault with available models  
*Period* *Obligations*  
09/09/82-09/09/84 FY83: \$23,983 TOTAL: \$47,983  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Turcotte, D. L. GSFC/Mead, G. D. 32-Geological Sci

**NASW 3342** **Cornell University** **3692**  
Set up a computer system for the spacecraft planetary imaging  
facility at Cornell  
*Period* *Obligations*  
10/01/79-10/31/83 FY83: \$39,992 TOTAL: \$214,956  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Veverka, J. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NCA 2-175301** **Cornell University** **3693**  
Compensation and saturation points of higher plants for CELSS  
*Period* *Obligations*  
06/15/83-06/14/84 FY83: \$12,683 TOTAL: \$12,683  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Langhans, R. W. ARC/MacElroy, R. D. 51-Biological Sci

**NCC 2-173** **Cornell University** **3694**  
Helicopter rotor aerodynamics/acoustics interactions  
*Period* *Obligations*  
02/01/82-08/31/83 FY83: TOTAL: \$11,693  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
George, A. R. ARC/Tauber, M. E. 41-Aero Engr

**NGL 33-010-082** **Cornell University** **3695**  
The study of lunar and planetary surfaces and atmospheres  
*Period* *Obligations*  
09/23/68-01/31/84 FY83: \$55,000 TOTAL: \$925,518  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sagan, C. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NGL 33-010-171** **Cornell University** **3696**  
A program in remote sensing  
*Period* *Obligations*  
02/14/72-05/01/83 FY83: TOTAL: \$1,000,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Philipson, W. R. HQ-ET/Vitale, J. A. 39-Env Sci, NEC

**NGL 33-010-186** **Cornell University** **3697**  
Studies of thermal structure and motion of planetary at-  
mospheres  
*Period* *Obligations*  
04/18/73-06/14/84 FY83: \$55,380 TOTAL: \$522,443  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gierasch, P. J. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

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**NGR 33-010-081** **Cornell University** **3698**  
2 to 4 micron spectroscopy of Mars  
*Period* *Obligations*  
03/01/73-04/30/83 FY83: TOTAL: \$725,087  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Houck, J. R. ARC/Haughney, L. C. 11-Astronomy

**NSG 1642** **Cornell University** **3705**  
Devices for integrated electro-optic circuits  
*Period* *Obligations*  
07/15/79-07/14/82 FY83: TOTAL: \$169,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ballantyne, J. M. LARC/Magee, C. J. 45-Elec Engr  
LARC/Hendricks, H. D.

**NGR 33-010-101** **Cornell University** **3699**  
An integrated program in exobiology and problems related to origin of life  
*Period* *Obligations*  
10/09/69-09/30/83 FY83: \$115,000 TOTAL: \$1,199,445  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sagan, C. E. HQ-EB/Devincenzi, D. L. 12-Chemistry  
Khare, B. N.

**NSG 1651** **Cornell University** **3706**  
Holographic fabrication of gratings in metal substrates  
*Period* *Obligations*  
08/15/79-10/31/82 FY83: TOTAL: \$155,412  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ballantyne, J. M. LARC/Walker, G. H. 45-Elec Engr  
Wagner, D. K. LARC/Conway, E. J.

**NGR 33-010-108** **Cornell University** **3700**  
Implications of convection within the Moon  
*Period* *Obligations*  
05/18/70-01/31/84 FY83: \$23,769 TOTAL: \$316,650  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Turcotte, D. L. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NSG 2347** **Cornell University** **3707**  
Far infrared spectral line observations from the G. P. Kuiper Airborne Observatory  
*Period* *Obligations*  
10/01/78-10/31/83 FY83: \$129,672 TOTAL: \$570,427  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harwit, M. O. ARC/Haughney, L. C. 11-Astronomy

**NGR 33-010-146** **Cornell University** **3701**  
Submillimeter astronomical spectrometry from aircraft  
*Period* *Obligations*  
02/01/72-10/31/83 FY83: \$70,000 TOTAL: \$467,504  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harwit, M. O. ARC/Muehl, C. L. 11-Astronomy  
ARC/Haughney, L. C.

**NSG 2382** **Cornell University** **3708**  
A study to assess the potential for using long chain polymers dissolved in water to study turbulence  
*Period* *Obligations*  
06/01/79-05/31/82 FY83: TOTAL: \$109,800  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lumley, J. L. ARC/Chapman, G. T. 41-Aero Engr

**NGR 33-010-161** **Cornell University** **3702**  
Studies of the magnetospheres of Earth and Jupiter  
*Period* *Obligations*  
01/18/72-06/30/83 FY83: TOTAL: \$597,790  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Farley, D. T. HQ-EE/Lynch, J. T. 11-Astronomy  
HQ-EE/Schmerling, E. R.

**NSG 2408** **Cornell University** **3709**  
Aerobic biological waste treatment for closed ecological life support systems  
*Period* *Obligations*  
09/15/79-05/14/84 FY83: \$125,000 TOTAL: \$279,960  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shuler, M. L. ARC/Wydeven, T. 43-Chem Engr

**NGR 33-010-220** **Cornell University** **3703**  
Interdisciplinary investigations of Mariner 9 data  
*Period* *Obligations*  
12/05/73-12/31/84 FY83: \$87,190 TOTAL: \$536,186  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sagan, C. E. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NSG 2412** **Cornell University** **3710**  
Molecular spectroscopy from the Kuiper Airborne Observatory  
*Period* *Obligations*  
10/01/79-09/30/84 FY83: \$80,900 TOTAL: \$354,540  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Beckwith, S. ARC/Haughney, L. C. 11-Astronomy

**NGT 33-010-800** **Cornell University** **3704**  
NASA graduate student researchers program  
*Period* *Obligations*  
06/01/83-05/31/84 FY83: \$13,470 TOTAL: \$13,470  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Philipson, W. R. HQ-LB/Owens, F. C. 49-Engr, NEC

**NSG 6020** **Cornell University** **3711**  
Rocket investigation of neutral atmosphere ionosphere coupling and planetary electrodynamics  
*Period* *Obligations*  
03/01/78-09/30/83 FY83: \$115,225 TOTAL: \$500,617  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kelley, M. C. GSFC/Early, L. J. 19-Phys Sci, NEC  
Kintner, P. M. GSFC/Pless, R. H.

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<b>NSG 7156</b>		<b>Cornell University</b>	<b>3712</b>
Physical studies of planetary surfaces			
<i>Period</i>	<i>Obligations</i>		
07/01/75-10/31/83	FY83: \$55,646 TOTAL: \$336,367		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Veverka, J.	HQ-EL/Boyce, J. M.	32-Geological Sci	
	HQ-EL/Quaide, W. L.		
<b>NSG 7324</b>		<b>Cornell University</b>	<b>3713</b>
Bolometer system			
<i>Period</i>	<i>Obligations</i>		
04/01/77-05/31/83	FY83: TOTAL: \$185,450		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Houck, J. R.	HQ-EZ/Boggess, N. W.	11-Astronomy	
	HQ-EZ/Weiler, E. J.		
<b>NSG 7529</b>		<b>Cornell University</b>	<b>3714</b>
Phylogeny of photosynthetic bacteria			
<i>Period</i>	<i>Obligations</i>		
02/01/79-12/31/82	FY83: TOTAL: \$29,024		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gibson, J.	HQ-EB/Devincenzi, D. L.	51-Biological Sci	
<b>NSG 7546</b>		<b>Cornell University</b>	<b>3715</b>
Participation in the Mars data analysis program: Global and regional studies of wind-indicators on the surface of Mars			
<i>Period</i>	<i>Obligations</i>		
04/01/79-01/31/84	FY83: \$34,760 TOTAL: \$208,960		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Veverka, J.	HQ-EL/Boyce, J. M.	32-Geological Sci	
	HQ-EL/Holt, H. E.		
<b>NSG 7593</b>		<b>Cornell University</b>	<b>3716</b>
Dynamical studies of Phobos and Deimos			
<i>Period</i>	<i>Obligations</i>		
03/01/79-07/15/83	FY83: TOTAL: \$129,604		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Burns, J. A.	HQ-EL/Quaide, W. L.	32-Geological Sci	
	HQ-EL/Taylor, L. A.		
<b>NSG 7606</b>		<b>Cornell University</b>	<b>3717</b>
Effects of photometric geometry on spectral reflectance measurements			
<i>Period</i>	<i>Obligations</i>		
05/01/79-03/31/84	FY83: \$56,800 TOTAL: \$250,660		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Veverka, J.	HQ-EL/Quaide, W. L.	32-Geological Sci	
	HQ-EL/French, B. M.		
<b>NSG 7612</b>		<b>Cornell University</b>	<b>3718</b>
Participation in the Mars data analysis program: Analysis of cloud forms in Viking and Mariner 9 images			
<i>Period</i>	<i>Obligations</i>		
04/01/79-03/31/84	FY83: \$67,454 TOTAL: \$246,124		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gierasch, P. J.	HQ-EL/Brinton, H. C.	31-Atmos Sci	
	HQ-EL/Brunk, W. E.		
<b>NCC 2-253</b>		<b>Cornell University - Medical Center</b>	<b>3719</b>
Effectiveness of circadian countermeasures in simulated trans-meridian flight schedules			
<i>Period</i>	<i>Obligations</i>		
07/01/83-03/31/84	FY83: \$75,000 TOTAL: \$75,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Monk, T. H.	ARC/Lauber, J. K.	56-Medical Sciences	
<b>NAG 1-311</b>		<b>Hofstra University</b>	<b>3720</b>
Effects of antennas and spaceborne structures on electromagnetic transmission and scattering			
<i>Period</i>	<i>Obligations</i>		
11/24/82-12/31/83	FY83: \$20,744 TOTAL: \$20,744		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Weissman, D. E.	LARC/Beck, F. B.	45-Elec Engr	
	LARC/Gilreath, M. C.		
<b>NAGW 468</b>		<b>Hofstra University</b>	<b>3721</b>
Radar measurements of ocean surface waves using the aircraft two frequency scatterometer			
<i>Period</i>	<i>Obligations</i>		
05/01/83-09/30/83	FY83: \$25,103 TOTAL: \$25,103		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Weissman, D. E.	HQ-EE/Wilson, W. S.	33-Oceanography	
	HQ-EE/Gregg, W. W.		
<b>NGR 33-209-002</b>		<b>Hofstra University</b>	<b>3722</b>
Radar studies and application of measurements of ocean wave height and directional spectrum			
<i>Period</i>	<i>Obligations</i>		
03/28/72-12/31/82	FY83: TOTAL: \$259,511		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Weissman, W. E.	LARC/Johnson, J. W.	45-Elec Engr	
<b>NAG 5-273</b>		<b>Hunter College</b>	<b>3723</b>
Reflectance modeling			
<i>Period</i>	<i>Obligations</i>		
09/01/82-08/31/84	FY83: \$70,300 TOTAL: \$131,988		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Strahler, A. H.	GSFC/Kimes, D. S.	55-Agriculture Sci	
<b>NCA 2-305201</b>		<b>Hunter College</b>	<b>3724</b>
A survey of geographic information system characteristics			
<i>Period</i>	<i>Obligations</i>		
08/01/82-10/31/83	FY83: TOTAL: \$30,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Strahler, A.	ARC/Peterson, D. L.	32-Geological Sci	
Clarke, K.	ARC/Wilson, D. E.		
<b>NSG 5325</b>		<b>Hunter College</b>	<b>3725</b>
Monitoring tropical vegetation succession with LANDSAT data			
<i>Period</i>	<i>Obligations</i>		
02/01/79-03/31/82	FY83: TOTAL: \$26,727		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Robinson, V. B.	GSFC/Ungar, S. G.	32-Geological Sci	

**NASA'S UNIVERSITY PROGRAM**  
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**NGT 33-230-830 New York Institute of Technology 3726**  
 Purpose of conducting early-start engineering careers for minorities and women  

Period	Obligations
07/01/83-09/30/86	FY83: \$105,111 TOTAL: \$105,111
Prin. Invest.	NASA Tech. Officer CASE Category
Williams, T.	HQ-U/Pohly, J. G. 29-Math/Computer, NEC

**NAG 1-155 New York University 3727**  
 Numerical simulation of the interaction of acoustic sources with a jet  

Period	Obligations
03/04/81-08/31/83	FY83: TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer CASE Category
Bayliss, A.	LARC/Maestrello, L. 41-Aero Engr

**NAG 1-314 New York University 3728**  
 Studies of active flow control  

Period	Obligations
11/18/82-11/17/83	FY83: \$10,000 TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ting, L.	LARC/Maestrello, L. 41-Aero Engr

**NAG 5-73 New York University 3729**  
 Multifrequency observations of selected extragalactic sources  

Period	Obligations
06/01/80-12/31/83	FY83: \$20,300 TOTAL: \$68,600
Prin. Invest.	NASA Tech. Officer CASE Category
Glassgold, A. E.	GSFC/Kondo, Y. 11-Astronomy
Bregman, J. N.	
Huggins, P. J.	

**NAG 5-341 New York University 3730**  
 Computational methods for general circulation models numerical methods for data assimilation and initialization  

Period	Obligations
07/01/83-05/31/84	FY83: \$91,000 TOTAL: \$91,000
Prin. Invest.	NASA Tech. Officer CASE Category
Isaacson, E.	GSFC/Halem, M. 31-Atmos Sci

**NAG 8-337 New York University 3731**  
 Gaseous coronae of galaxies and red quasi-stellar objects  

Period	Obligations
03/01/80-12/31/83	FY83: TOTAL: \$11,000
Prin. Invest.	NASA Tech. Officer CASE Category
Glassgold, A. E.	MSFC/Jones, J. B. 11-Astronomy

**NAG 8-393 New York University 3732**  
 Red quasi-stellar objects II  

Period	Obligations
06/18/81-06/17/82	FY83: TOTAL: \$7,424
Prin. Invest.	NASA Tech. Officer CASE Category
Glassgold, A. E.	MSFC/Stone, J. F. 11-Astronomy

**NAG 8-449 New York University 3733**  
 Galactic X-ray emission from coronae and winds  

Period	Obligations
03/07/83-03/06/84	FY83: \$14,438 TOTAL: \$14,438
Prin. Invest.	NASA Tech. Officer CASE Category
Bregman, J. N.	MSFC/Stone, J. F. 11-Astronomy

**NCA 2-525201 New York University 3734**  
 Use of high-resolution total variation diminishing schemes for steady state calculations  

Period	Obligations
06/15/82-10/15/82	FY83: TOTAL: \$15,773
Prin. Invest.	NASA Tech. Officer CASE Category
Harten, A.	ARC/Warming, R. F. 21-Mathematics
	ARC/Yee, H.

**NCA 2-525301 New York University 3735**  
 Dimensionally-split methods for the solution of 2D flows with discontinuities  

Period	Obligations
06/15/83-11/01/83	FY83: \$16,000 TOTAL: \$16,000
Prin. Invest.	NASA Tech. Officer CASE Category
Harten, A.	ARC/Warming, R. F. 21-Mathematics
	ARC/Yee, H.

**NCC 1-58 New York University 3736**  
 Analysis of vortex wake structure  

Period	Obligations
11/03/81-11/02/83	FY83: \$50,000 TOTAL: \$66,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ting, L.	LARC/Liu, C. H. 41-Aero Engr

**NGR 33-016-196 New York University 3737**  
 Physical properties of molecular clouds  

Period	Obligations
09/01/73-06/30/84	FY83: \$40,000 TOTAL: \$353,823
Prin. Invest.	NASA Tech. Officer CASE Category
Glassgold, A. E.	HQ-EZ/Stencel, R. E. 11-Astronomy
	HQ-EZ/Weiler, E. J.

**NGR 33-016-201 New York University 3738**  
 Study of transonic flow over yawed wings  

Period	Obligations
09/01/73-12/31/83	FY83: \$30,000 TOTAL: \$481,662
Prin. Invest.	NASA Tech. Officer CASE Category
Garabedian, P. R.	ARC/Hicks, R. M. 41-Aero Engr

**NGT 33-016-800 New York University 3739**  
 Graduate student training program in computational fluid dynamics  

Period	Obligations
07/01/80-12/31/83	FY83: \$105,000 TOTAL: \$380,000
Prin. Invest.	NASA Tech. Officer CASE Category
Garabedian, P. R.	HQ-RT/Graves, R. A., Jr. 41-Aero Engr

**NSG 1579 New York University 3740**  
 Computational fluid dynamics on the star  

Period	Obligations
12/01/78-11/30/83	FY83: \$50,000 TOTAL: \$575,000
Prin. Invest.	NASA Tech. Officer CASE Category
Garabedian, P. R.	LARC/South, J. C., Jr. 21-Mathematics

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**NSG 3059 New York University 3741**  
Analysis of experiments on hydrodynamics instability in the absence of gravity  
*Period* *Obligations*  
06/01/75-08/28/83 FY83: TOTAL: \$63,614  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ting, L. LERC/Chai, A. T. 49-Engr, NEC

**NSG 5034 New York University 3742**  
Research program in climatology and meteorology  
*Period* *Obligations*  
01/01/75-05/31/83 FY83: TOTAL: \$828,713  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Isaacson, E. GSFC/Halem, M. 31-Atmos Sci  
Stoker, J. J.

**NSG 5130 New York University 3743**  
Short term numerical weather prediction and very long term climate modelling  
*Period* *Obligations*  
10/01/76-10/31/85 FY83: \$90,000 TOTAL: \$517,412  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ghil, M. GSFC/Halem, M. 31-Atmos Sci

**NAG 2-225 Polytechnic Institute of New York 3744**  
Polymer synthesis  
*Period* *Obligations*  
02/01/83-04/30/83 FY83: \$5,000 TOTAL: \$5,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pearce, E. M. ARC/Parker, J. A. 12-Chemistry  
ARC/Heimbuch, A. H.

**NAG 2-229 Polytechnic Institute of New York 3745**  
Impact modification of high temperature polymers  
*Period* *Obligations*  
02/01/83-09/30/83 FY83: \$46,593 TOTAL: \$46,593  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pearce, E. M. ARC/Golub, M. A. 12-Chemistry  
Mijovic, J. ARC/Gitwee, W. J.

**NAGW 284 Polytechnic Institute of New York 3746**  
Study of large scale structures in the topside ionosphere using Alouette 1 and ISIS data  
*Period* *Obligations*  
02/01/82-01/31/84 FY83: \$45,000 TOTAL: \$85,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gross, S. H. HQ-EE/Benson, R. F. 13-Physics  
HQ-EE/Wiskerchen, M. J.

**NCC 2-172 Polytechnic Institute of New York 3747**  
Geometrical acoustics and transonic helicopter sound  
*Period* *Obligations*  
02/01/82-02/29/84 FY83: \$35,730 TOTAL: \$73,730  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Isom, M. P. ARC/Yu, Y. H. 41-Aero Engr  
ARC/Schmitz, F. H.

**NGR 33-006-070 Polytechnic Institute of New York 3748**  
Synthesis of polypeptides, sugar phosphates and polynucleotides from intermediates under simulated conditions  
*Period* *Obligations*  
04/26/73-01/31/84 FY83: \$32,000 TOTAL: \$531,209  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eirich, F. R. HQ-EB/Devincenzi, D. L. 12-Chemistry  
HQ-EB/Rambler, M.

**NAG 4-9 Queensborough Community College 3749**  
Development of a design methodology for determining threshold values through a statistical analysis of sensor output data from current and experiment sensor redundancy management algorithms  
*Period* *Obligations*  
06/15/82-06/14/83 FY83: TOTAL: \$30,586  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Scalzo, F. DFRF/MacKall, D. A. 21-Mathematics

**NCC 2-108 Queensborough Community College 3750**  
Application of FDM to fiber optic data bussing in real time redundant, distributed computing systems  
*Period* *Obligations*  
09/01/80-10/31/83 FY83: \$58,123 TOTAL: \$174,555  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Brown, R. J. ARC/Webster, L. D. 45-Elec Engr  
Satyanarayana, T.

**NAG 1-171 Rensselaer Polytechnic Institute 3751**  
Parameter estimation of large flexible aerospace structures with application to control of maypole deployable reflector  
*Period* *Obligations*  
04/01/81-10/15/83 FY83: TOTAL: \$216,418  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Balas, M. J. LARC/Armstrong, E. S. 45-Elec Engr  
LARC/Taylor, L. W., Jr.

**NAG 1-253 Rensselaer Polytechnic Institute 3752**  
Mechanical properties studies pertaining to enhanced toughness matrices for high performance composites  
*Period* *Obligations*  
02/01/82-01/31/84 FY83: \$50,000 TOTAL: \$126,102  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sternstein, S. S. LARC/Johnston, N. J. 47-Materials Engr

**NAG 1-330 Rensselaer Polytechnic Institute 3753**  
Optimize the passive shock wave-boundary layer control for supercritical airfoil drag reduction  
*Period* *Obligations*  
03/15/83-03/14/84 FY83: \$59,000 TOTAL: \$59,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nagamatsu, H. T. LARC/Maestrello, L. 41-Aero Engr

**NAG 2-198 Rensselaer Polytechnic Institute 3754**  
Infrared observations of star-forming regions in the outer Milkyway  
*Period* *Obligations*  
10/01/82-09/30/84 FY83: TOTAL: \$9,943  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kutner, M. L. ARC/Haughney, L. C. 11-Astronomy



**NASA'S UNIVERSITY PROGRAM  
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<b>NAG 3-22</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3755</b>
Creep-fatigue interactions in nickel base superalloys			
<i>Period</i>	<i>Obligations</i>		
01/01/80-08/15/83	FY83: \$100	TOTAL: \$109,987	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Duquette, D. J.	LERC/Miner, R. V.	47-Materials Engr	
Stoloff, N. S.	LERC/Hirschberg, M. H.		

<b>NAG 3-213</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3762</b>
Characterization of melting and freezing of fuels by thermal analysis			
<i>Period</i>	<i>Obligations</i>		
10/15/81-10/12/84	FY83: \$64,565	TOTAL: \$175,020	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Moynihan, C. T.	LERC/Friedman, R.	43-Chem Engr	

<b>NAG 3-37</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3756</b>
Proposal structural dynamics studies for fan/turbine design			
<i>Period</i>	<i>Obligations</i>		
03/03/80-06/14/83	FY83:	TOTAL: \$200,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Loewy, R. G.	LERC/Kiraly, L. J.	46-Mech Engr	
Shephard, M. S.	LERC/Kielb, R. E.		

<b>NAG 3-175</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3757</b>
Low temperature growth and electrical characterization of insulators for gas			
<i>Period</i>	<i>Obligations</i>		
05/01/81-07/29/83	FY83:	TOTAL: \$114,940	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Borrego, J. M.	LERC/Liu, D. C.	19-Phys Sci, NEC	
Ghandhi, S. K.			

<b>NAG 3-188</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3758</b>
Research on gallium arsenide diffused junction solar cells			
<i>Period</i>	<i>Obligations</i>		
06/25/81-12/30/83	FY83: \$60,000	TOTAL: \$151,490	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ghandi, S. K.	LERC/Brinker, D. J.	45-Elec Engr	
Borrego, J. M.	LERC/Flood, D. J.		

<b>NAG 3-199</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3759</b>
Tetrahydrofuran-containing polymers as battery separators			
<i>Period</i>	<i>Obligations</i>		
09/01/81-10/29/83	FY83: \$49,995	TOTAL: \$95,695	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Moore, J. A.	LERC/Sheibley, D. W.	12-Chemistry	

<b>NAG 3-203</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3760</b>
Chemical vapor deposition of single crystalline silicon carbide (SiC) suitable for semiconductor applications			
<i>Period</i>	<i>Obligations</i>		
09/01/81-09/02/84	FY83:	TOTAL: \$50,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Diefen, R. J.	LERC/Powell, J. A.	47-Materials Engr	

<b>NAG 3-205</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3761</b>
Emission infrared Fourier microspectrometer photometric study of fuel deposit formation			
<i>Period</i>	<i>Obligations</i>		
08/15/81-02/13/85	FY83: \$70,000	TOTAL: \$153,255	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lauer, J. L.	GSFC/Seng, G. T.	12-Chemistry	

<b>NAG 3-222</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3763</b>
Rates of bearing surface change under operating conditions by non-contact speckle metrology			
<i>Period</i>	<i>Obligations</i>		
12/15/81-12/13/83	FY83: \$50,000	TOTAL: \$100,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lauer, J. L.	LERC/Jones, W. R., Jr.	46-Mech Engr	

<b>NAG 3-262</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3764</b>
Thermoviscoplasticity theory for thermomechanical loading			
<i>Period</i>	<i>Obligations</i>		
02/25/82-02/23/84	FY83: \$48,227	TOTAL: \$90,912	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Krempf, E.	LERC/Thompson, R. L.	41-Aero Engr	
	LERC/Johns, R. H.		

<b>NAG 3-292</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3765</b>
Effects of pressure gradients, temperature, and wall temperature ratio on the stagnation point heat transfer for circular cylinders and gas turbine ranges			
<i>Period</i>	<i>Obligations</i>		
08/01/82-07/31/83	FY83:	TOTAL: \$58,500	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Duffy, R. E.	LERC/Graham, R. W.	46-Mech Engr	
Nagamatsu, H. T.			

<b>NAG 3-333</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3766</b>
Influence of melt convection on solid liquid interfaces under terrestrial and reduced gravity environments			
<i>Period</i>	<i>Obligations</i>		
10/01/82-09/30/83	FY83:	TOTAL: \$150,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Glicksman, M. E.	LERC/Gray, H. R.	47-Materials Engr	
	LERC/Chai, A.		

<b>NAGW 476</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3767</b>
Investigation of hcn synthesis on Jupiter by photolysis of nh3			
<i>Period</i>	<i>Obligations</i>		
09/01/83-08/31/84	FY83: \$37,625	TOTAL: \$37,625	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ferris, J. P.	HQ-EL/Brinton, H. C.	11-Astronomy	

<b>NAS 8-32425</b>		<b>Rensselaer Polytechnic Institute</b>	<b>3768</b>
Dendritic solidification at small supercooling			
<i>Period</i>	<i>Obligations</i>		
03/01/77-01/31/83	FY83: \$50,000	TOTAL: \$353,002	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Glicksman, M. E.	MSFC/Schaefer, D. A.	47-Materials Engr	
	MSFC/Savage, W. H.		

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**NAS 8-32936 Rensselaer Polytechnic Institute 3769**  
Vapor growth of alloy-type semiconductor crystals experiment

Period	Obligations	
03/20/78-09/30/83	FY83: \$20,000	TOTAL: \$457,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wiedemier, H.	MSFC/Schaefer, D. A.	47-Materials Engr
Davidson, M. C.	MSFC/Williams, J. R.	
Irene, E. A.		

**NAS 8-33562 Rensselaer Polytechnic Institute 3770**  
Data analysis and modeling of ultraviolet spectrometer and polarimeter, experiment and other related experiments for Solar Maximum Mission

Period	Obligations	
02/08/80-01/31/84	FY83: \$84,863	TOTAL: \$254,863
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wiedemeier, H.	MSFC/Schaefer, D. A.	31-Atmos Sci
	MSFC/Zwiener, J. M.	

**NGL 33-018-003 Rensselaer Polytechnic Institute 3771**  
Interdisciplinary materials research including fundamental physics and chemistry of materials, environmental effects, and related problems

Period	Obligations	
09/01/70-04/30/86	FY83: \$449,600	TOTAL: \$7,359,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Loewy, R. G.	HQ-RT/Greenfield, M. A.	
Wiberly, S. E.	HQ-RT/Bersch, C. F.	47-Materials Engr

**NGR 33-018-148 Rensselaer Polytechnic Institute 3772**  
Photochemical investigations of the atmosphere of other planets

Period	Obligations	
08/27/70-11/30/83	FY83: \$86,521	TOTAL: \$639,729
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ferris, J. P.	HQ-EB/Devincenzi, D. L.	12-Chemistry

**NSG 1624 Rensselaer Polytechnic Institute 3773**  
Investigation of passive shock wave-boundary layer control for transonic airfoil drag reduction

Period	Obligations	
10/01/79-03/31/82	FY83:	TOTAL: \$109,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nagamatsu, H. T.	LARC/Harris, C. D.	41-Aero Engr
Brower, W. B.	LARC/Barnwell, R. W.	

**NSG 3262 Rensselaer Polytechnic Institute 3774**  
Suggested programs for unsteady turbine heat transfer

Period	Obligations	
05/01/79-03/28/84	FY83:	TOTAL: \$291,289
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mayle, R. E.	LERC/Vanfossen, G. J., Jr.	41-Aero Engr
	LERC/Simoneau, R. J.	

**NAS 5-27323 Rochester Institute of Technology 3775**  
Radiometric integrity of LANDSAT-D band 7 data evaluation

Period	Obligations	
09/24/82-01/24/85	FY83: \$55,000	TOTAL: \$80,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schott, J. R.	GSFC/Oseroff, H.	49-Engr, NEC
	GSFC/Stuart, L. M.	

**NAG 2-164 Rockefeller University 3776**  
Vestibular system and neural correlates of motion sickness

Period	Obligations	
03/01/82-02/28/84	FY83: \$39,000	TOTAL: \$79,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Miller, A. D.	ARC/Daunton, N. G.	51-Biological Sci
Wilson, V. J.	ARC/Suri, K.	
Schor, R. H.		

**NAGW 321 Rockefeller University 3777**  
Studies of the origin and early evolution of photosynthesis

Period	Obligations	
04/15/82-04/15/84	FY83: \$56,157	TOTAL: \$108,696
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mercer-Smith, J. A.	HQ-EB/Devincenzi, D. L.	
Mauzerall, D.	HQ-EB/Rambler, M.	51-Biological Sci

**NCA 2-630001 Rockefeller University 3778**  
Investigation of nucleic acid interaction with activated amino acids in amino acid polymerization

Period	Obligations	
06/01/80-05/31/82	FY83:	TOTAL: \$53,246
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Loew, G. H.	ARC/MacElroy, R. D.	51-Biological Sci

**NCC 2-196 Rockefeller University 3779**  
Mg++ interaction with hydrated phosphate groups of nucleic acids and with amino acids as potential activators in peptide bond formation

Period	Obligations	
06/01/82-06/30/83	FY83: \$5,252	TOTAL: \$38,960
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Loew, G.	ARC/MacElroy, R. D.	12-Chemistry

**NSG 2380 Rockefeller University 3780**  
Vestibulocollic reflexes of otolith origin

Period	Obligations	
04/01/79-12/31/83	FY83: \$50,500	TOTAL: \$223,372
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilson, V. J.	ARC/Daunton, N. G.	51-Biological Sci

**NAG 1-323 State Univ of New York - Albany 3781**  
Determination of standard chemical kinetics for Earth atmosphere flow field calculations

Period	Obligations	
02/01/83-01/31/84	FY83: \$14,971	TOTAL: \$14,971
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Saturno, A. F.	LARC/Jones, J. J.	12-Chemistry
	LARC/Sutton, K.	

**NAG 1-365 State Univ of New York - Albany 3782**  
NASA workshop on heterogeneous processes in the troposphere

Period	Obligations	
04/20/83-04/19/84	FY83: \$69,740	TOTAL: \$69,740
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mohnen, V. A.	LARC/Mugler, J. P., Jr.	31-Atmos Sci

**NASA'S UNIVERSITY PROGRAM  
NEW YORK (Continued)**

**NAG 2-230**      **State Univ of New York - Albany**      **3783**  
U-2 filter samples  
*Period*      *Obligations*  
03/15/83-03/14/84      FY83: \$19,877      TOTAL: \$19,877  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Kritz, M. A.      ARC/Margozzi, A. P.      31-Atmos Sci

**NAG 5-24**      **State Univ of New York - Albany**      **3784**  
The structural and tectonic evolution of the north Anatoleon Fault  
*Period*      *Obligations*  
03/15/80-09/30/82      FY83:      TOTAL: \$140,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Dewey, J. F.      GSFC/Kouns, C. W.      32-Geological Sci  
Burke, K. C.

**NAG 5-155**      **State Univ of New York - Albany**      **3785**  
Neotectonics if the Northern Caribbean plate boundary zone  
*Period*      *Obligations*  
04/01/81-09/30/82      FY83:      TOTAL: \$34,856  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Burke, K.      GSFC/Kouns, C. W.      32-Geological Sci  
Dewey, J. F.

**NAG 5-333**      **State Univ of New York - Albany**      **3786**  
Research of ocean geodynamic cycles  
*Period*      *Obligations*  
07/01/83-06/30/84      FY83: \$40,084      TOTAL: \$40,084  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Burke, K.      GSFC/Welker, J. E.      32-Geological Sci

**NAGW 487**      **State Univ of New York - Albany**      **3787**  
Archeau sedimentation and tectsuics in South Africa  
*Period*      *Obligations*  
08/01/83-03/31/84      FY83: \$3,500      TOTAL: \$3,500  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Kidd, W. S.      HQ-EL/Williams, R. J.      32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 489**      **State Univ of New York - Albany**      **3788**  
Synthesis of proterozoic depositional data as a prerequisite for tectonic and thermal modelling  
*Period*      *Obligations*  
08/01/83-04/30/84      FY83: \$1,983      TOTAL: \$1,983  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Burke, K.      HQ-EL/Williams, R. J.      32-Geological Sci  
HQ-EL/French, B. M.

**NAS 5-27227**      **State Univ of New York - Albany**      **3789**  
Displacement strain and relative plate motion in Africa/Arabia/Anatolia/Eurasin plate system  
*Period*      *Obligations*  
04/28/82-04/28/83      FY83:      TOTAL: \$49,653  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Dewey, J. F.      GSFC/Mead, G. D.      32-Geological Sci

**NAS 8-32893**      **State Univ of New York - Albany**      **3790**  
Night-time and daytime orbital survey of lightning and convective phenomena experiment support  
*Period*      *Obligations*  
05/03/78-03/01/84      FY83: \$20,000      TOTAL: \$85,278  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Laza, G. G.      MSFC/Keller, V. W.      39-Env Sci, NEC  
MSFC/Anderson, B. J.

**NAS 8-33380**      **State Univ of New York - Albany**      **3791**  
Remote observations of severe storms  
*Period*      *Obligations*  
04/30/79-06/30/84      FY83: \$90,002      TOTAL: \$540,059  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Orville, R. E.      MSFC/Christian, H. J.      31-Atmos Sci  
MSFC/Vaughan, O. H.

**NAS 9-15802**      **State Univ of New York - Albany**      **3792**  
Research study of non-invasive monitoring of cardio-pulmonary function  
*Period*      *Obligations*  
05/01/79-06/30/82      FY83:      TOTAL: \$108,149  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Farhi, L. E.      JSC/Horrigan, D. J.      59-Life Sci, NEC

**NAS 9-16331**      **State Univ of New York - Albany**      **3793**  
Study errors applying NOAA six and eight data introduced by applying NOAA 6 and NOAA 8 AVHRR data as an estimator of vegetative indices  
*Period*      *Obligations*  
02/01/81-01/31/82      FY83:      TOTAL: \$48,283  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Duggin, M. J.      JSC/Whitehead, V.      31-Atmos Sci

**NAS 9-16514**      **State Univ of New York - Albany**      **3794**  
Development of procedures to exploit daily acquisition capability of NOAA-6 and AVHRR data as a vegetation condition indicator  
*Period*      *Obligations*  
11/01/81-10/31/82      FY83:      TOTAL: \$40,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Duggin, M. J.      JSC/Whitehead, V. S.      55-Agriculture Sci

**NAS 9-16604**      **State Univ of New York - Albany**      **3795**  
Establish microbial control in air/water post-treatment beds  
*Period*      *Obligations*  
04/01/82-11/15/83      FY83:      TOTAL: \$20,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Janauer, G. E.      JSC/Sauer, R.      54-Env Biology

**NAS 9-16783**      **State Univ of New York - Albany**      **3796**  
Develop procedures to exploit daily acquisition capability of NOAA6 and AVHRR data as a vegetative condition indicator  
*Period*      *Obligations*  
11/01/82-10/31/83      FY83: \$40,000      TOTAL: \$40,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Duggin, M. J.      JSC/Whitehead, V.      39-Env Sci, NEC

<b>NASW 3333</b>	<b>State Univ of New York - Albany</b>	<b>3797</b>
Planetary subsurface water analyzer instrument development		
<i>Period</i>	<i>Obligations</i>	
10/01/79-12/15/82	FY83:	TOTAL: \$181,817
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anderson, D. M.	HQ-EL/Holt, H. E.	32-Geological Sci

<b>NCA 2-748301</b>	<b>State Univ of New York - Albany</b>	<b>3798</b>
Determination of air mass origin by means of radionuclide measurements		
<i>Period</i>	<i>Obligations</i>	
04/01/83-09/30/84	FY83: \$24,300	TOTAL: \$24,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kritz, M.	ARC/Russell, P.	31-Atmos Sci

<b>NCA 2-748302</b>	<b>State Univ of New York - Albany</b>	<b>3799</b>
Evaluation of free troposphere/boundary layer exchange using radionuclide measurements		
<i>Period</i>	<i>Obligations</i>	
06/01/83-12/31/84	FY83: \$24,596	TOTAL: \$24,596
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kritz, M.	ARC/Lawless, J. G.	31-Atmos Sci

<b>NSG 2386</b>	<b>State Univ of New York - Albany</b>	<b>3800</b>
Identification of tropospheric and stratospheric air by tracer		
<i>Period</i>	<i>Obligations</i>	
05/01/79-12/31/82	FY83:	TOTAL: \$86,856
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lazrus, A. L.	ARC/Margozi, A. P.	31-Atmos Sci

NSG 3095	State Univ of New York - Albany	3801
Fundamentals of radiation tolerance in silicon solar cells		
<i>Period</i>	<i>Obligations</i>	
01/26/76-07/05/82	FY83:	TOTAL: \$324,630
<i>Prin. Invest.</i>	NASA Tech. Officer	<i>CASE Category</i>
Corbett, J. W.	LERC/Weinberg, I.	39-Env Sci, NEC
	LERC/Swartz, C. R.	

NAG 2-232		State Univ of New York - Binghamton		3802
Evaluation of future primate research				
Period		Obligations		
04/01/83-03/31/84		FY83: \$69,206	TOTAL: \$69,206	
Prin. Invest		NASA Tech. Officer	CASE Category	
Sulzman, F. M.		ARC/Gomersall, E. W.	51-Biological Sci	
		ARC/Johnson, R. D.		

<b>NAG 5-145</b>		<b>State Univ of New York - Binghamton</b>		<b>3803</b>
Effects of the oceans on polar motion				
<i>Period</i>		<i>Obligations</i>		
03/01/81-06/15/84		FY83: \$40,000		TOTAL: \$102,460
<i>Prin. Invest.</i>		<i>NASA Tech. Officer</i>		<i>CASE Category</i>
Dickman, S. R.		GSFC/Welker, J. E.		32-Geological Sci

<b>NAG 5-240</b>	<b>State Univ of New York - Binghamton</b>	<b>3804</b>
Crustal dynamics studies in the People's Republic of China		
<i>Period</i>	<i>Obligations</i>	
06/01/82-12/31/83	FY83:	TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wu, F. T.	GSFC/Welker, J. E.	32-Geological Sci

<b>NAS 2-10621</b>	<b>State Univ of New York - Binghamton</b>	<b>3805</b>
Synchronization of primate circadian rhythms in space		
<i>Period</i>	<i>Obligations</i>	
04/01/80-10/31/84	FY83: \$63,618	TOTAL: \$169,414
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sulzman, F. M.	ARC/Souza, K. A.	51-Biological Sci

<b>NAS 9-15975</b> <b>State Univ of New York - Binghamton</b> <b>3806</b>	
<b>Neurospora experiment</b>	
<i>Period</i>	<i>Obligations</i>
<b>11/09/79-11/30/83</b>	<b>FY83: TOTAL: \$59,310</b>
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
<b>Sulzman, F. M.</b>	<b>JSC/Nolte, R. W.</b>
<b>Fuller, C. A.</b>	<b>51-Biological Sci</b>
<b>Moore-ede, M. C.</b>	

<b>NGT 33-188-800 State Univ of New York - Binghamton 3807</b>	
Cardiovascular circadian rhythms	
<i>Period</i>	<i>Obligations</i>
09/01/80-08/31/83	FY83: TOTAL: \$38,000
<i>Prin. Invest.</i>	<i>CASE Category</i>
Sulzman, F. M.	HQ-LB/Carter, C. H. 51-Biological Sci

NGT 33-188-801 State Univ of New York - Binghamton 3808		
Graduate student researchers program		
<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/84	FY83: \$15,000	TOTAL: \$41,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jensen, R. A.	HQ-LB/Owens, F. C.	51-Biological Sci

<b>NGT 33-188-802 State Univ of New York - Binghamton 3809</b> Graduate student researchers program		
<i>Period</i>	<i>Obligations</i>	
06/01/82-05/31/84	FY83: \$15,000	TOTAL: \$28,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Inman, D. J.	HQ-LB/Owens, F. C.	13-Physics

Period		Obligations
06/01/82-09/30/83	FY83:	TOTAL: \$13,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Goel, N. S.	HQ-LB/Carter, C. H.	49-Engr, NEC

<b>NAG 1-249</b>	<b>State Univ of New York - Buffalo</b>	<b>3811</b>
Debugging tools and multiport nodes for a distributed environment		
<i>Period</i>	<i>Obligations</i>	
01/19/82-01/18/84	FY83: \$80,239	TOTAL: \$136,044
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wittie, L. D.	LARC/Foudriat, E. C.	22-Computer Science
	LARC/Orlando, N. E.	

NAG 2-211		State Univ of New York - Buffalo		3812
Immobilization/remobilization and the regulation of muscle mass				
Period		Obligations		
11/01/82-10/31/83		FY83: \$47,692	TOTAL: \$47,692	
Prin. Invest.		NASA Tech. Officer		CASE Category
Almon, R. R.		ARC/Ellis, S.		51-Biological Sci

**NASA'S UNIVERSITY PROGRAM  
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<b>NAGW 330 State Univ of New York - Buffalo 3813</b>			
Planetary permafrost			
<i>Period</i>	<i>Obligations</i>		
06/01/82-06/30/84	FY83: \$30,224	TOTAL: \$58,224	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Anderson, D.	HQ-EL/Boyce, J. M.	32-Geological Sci	
<b>NAS 9-16042 State Univ of New York - Buffalo 3814</b>			
Life science flight experiment: Inflight study of cardiovascular deconditioning definition phase			
<i>Period</i>	<i>Obligations</i>		
01/17/80-10/31/86	FY83: \$246,740	TOTAL: \$534,762	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Farhi, L.	JSC/Peck, E. E.	59-Life Sci, NEC	
<b>NGR 33-015-108 State Univ of New York - Buffalo 3815</b>			
Planetary curriculum and related geologic research			
<i>Period</i>	<i>Obligations</i>		
06/02/70-04/30/84	FY83: \$49,900	TOTAL: \$585,068	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Shapiro, I. I.	HQ-EL/Boyce, J. M.	32-Geological Sci	
<b>NGT 33-183-800 State Univ of New York - Buffalo 3816</b>			
NASA graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
06/01/83-05/31/84	FY83: \$11,202	TOTAL: \$11,202	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
George, W. K.	HQ-LB/Owens, F. C.	41-Aero Engr	
<b>NGT 33-183-801 State Univ of New York - Buffalo 3817</b>			
NASA graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
05/20/83-05/19/84	FY83: \$15,000	TOTAL: \$15,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Inman, D. J.	HQ-LB/Owens, F. C.	46-Mech Engr	
<b>NAG 2-56 State Univ of New York - Stony Brook 3818</b>			
Two to four micron spectroscopy: Hydroxyl ions and water of hydration in interstellar grains			
<i>Period</i>	<i>Obligations</i>		
10/01/80-09/30/83	FY83:	TOTAL: \$42,993	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Knacke, R.	ARC/Haughney, L. C.	11-Astronomy	
<b>NAG 3-164 State Univ of New York - Stony Brook 3819</b>			
A microstructural study of plasma sprayed thermal barrier coatings			
<i>Period</i>	<i>Obligations</i>		
03/05/81-03/02/84	FY83: \$45,000	TOTAL: \$125,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Herman, H.	LERC/Miller, R. A.	47-Materials Engr	
Berndt, C. C.			
<b>NAG 3-381 State Univ of New York - Stony Brook 3820</b>			
Combustion of particulate clouds at reduced gravitational conditions			
<i>Period</i>	<i>Obligations</i>		
12/22/82-12/21/83	FY83: \$50,000	TOTAL: \$50,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Berlad, A. L.	LERC/Labus, T. L.	49-Engr, NEC	
<b>NAG 5-151 State Univ of New York - Stony Brook 3821</b>			
Finite element investigation of lithosphere tectonics			
<i>Period</i>	<i>Obligations</i>		
03/15/81-09/14/82	FY83:	TOTAL: \$44,666	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Melosh, H. J.	GSFC/Welker, J.	32-Geological Sci	
	GSFC/Cohen, S. C.		
<b>NAG 5-275 State Univ of New York - Stony Brook 3822</b>			
Solar system investigations			
<i>Period</i>	<i>Obligations</i>		
10/01/82-01/31/84	FY83:	TOTAL: \$9,500	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Caldwell, J.	GSFC/Kondo, Y.	11-Astronomy	
Owen, T.			
<b>NAG 5-285 State Univ of New York - Stony Brook 3823</b>			
The abundance of nitrogen containing organic compounds in Titan's atmosphere			
<i>Period</i>	<i>Obligations</i>		
11/15/82-08/14/83	FY83: \$15,000	TOTAL: \$15,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Caldwell, J. J.	GSFC/Kunde, V. G.	12-Chemistry	
Kim, S. J.	GSFC/Maguire, W. C.		
<b>NAG 9-31 State Univ of New York - Stony Brook 3824</b>			
Crystal chemistry and chemical petrology of lunar rocks			
<i>Period</i>	<i>Obligations</i>		
02/01/83-01/31/84	FY83: \$63,300	TOTAL: \$63,300	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lindsley, D. H.	JSC/Dietrich, J. W.	13-Physics	
<b>NAGW 25 State Univ of New York - Stony Brook 3825</b>			
Rare gases in meteorites			
<i>Period</i>	<i>Obligations</i>		
02/01/80-09/30/82	FY83:	TOTAL: \$153,583	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Schaeffer, O. A.	HQ-EL/Quaide, W. L.	32-Geological Sci	
<b>NAGW 50 State Univ of New York - Stony Brook 3826</b>			
Crater modification by gravity			
<i>Period</i>	<i>Obligations</i>		
03/01/80-02/29/84	FY83: \$12,372	TOTAL: \$129,683	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Melosh, H. J.	HQ-EL/Williams, R. J.	32-Geological Sci	
	HQ-EL/French, B. M.		
<b>NAGW 144 State Univ of New York - Stony Brook 3827</b>			
The descriptive ecology at Hydra: Toward a test core for ecological prediction			
<i>Period</i>	<i>Obligations</i>		
02/15/81-12/31/82	FY83:	TOTAL: \$54,243	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Slobodkin, L. B.	HQ-EB/Devincenzi, D. L.	54-Env Biology	
<b>NAGW 160 State Univ of New York - Stony Brook 3828</b>			
Interdisciplinary studies with Voyager Jupiter data			
<i>Period</i>	<i>Obligations</i>		
04/01/81-03/31/84	FY83: \$36,500	TOTAL: \$108,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Caldwell, J. J.	HQ-EL/Brinton, H. C.	31-Atmos Sci	

# **NASA'S UNIVERSITY PROGRAM** **NEW YORK (Continued)**

**NAGW 353 State Univ of New York - Stony Brook 3829**  
Measurement of concentration and variation in stratospheric chlorine oxide from a portable ground based millimeter wave system

Period	Obligations	
05/15/82-05/14/83	FY83: \$95,174	TOTAL: \$151,652
Prin. Invest.	NASA Tech. Officer	CASE Category
Soloman, P. M.	HQ-EB/Chandra, S.	31-Atmos Sci
	HQ-EB/Watson, R. T.	

**NAGW 486 State Univ of New York - Stony Brook 3830**  
Protogenesis of the archean gravitic rocks, Raisy Lake, Ontario

Period	Obligations	
08/01/83-07/31/84	FY83: \$5,000	TOTAL: \$5,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hanson, G. N.	HQ-EL/Williams, R. J.	32-Geological Sci
	HQ-EL/French, B. M.	

**NAS 1-16444 State Univ of New York - Stony Brook 3831**  
Science support for the Earth radiation budget experiment (ERBE)

Period	Obligations	
09/24/80-09/23/85	FY83: \$66,000	TOTAL: \$163,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Heeger, A. J.	LARC/Hall, J. B., Jr.	31-Atmos Sci
	LARC/Barkstrom, B. R.	

**NAS 1-16607 State Univ of New York - Stony Brook 3832**  
Study of dynamics of phytoplankton patches on Nantucket shoals

Period	Obligations	
04/06/81-04/05/82	FY83:	TOTAL: \$31,858
Prin. Invest.	NASA Tech. Officer	CASE Category
Wilson, R. E.	LARC/Esaias, W. E.	33-Oceanography
Carter, H. M.	LARC/Hypes, W.	

**NAS 2-10520 State Univ of New York - Stony Brook 3833**  
Investigation on the effects of hypogravity on some critical cellular events in plant development

Period	Obligations	
01/17/80-03/01/82	FY83: \$50	TOTAL: \$31,298
Prin. Invest.	NASA Tech. Officer	CASE Category
Krikorian, A. D.	ARC/Ferandin, J.	51-Biological Sci
	ARC/Sebasta, P. D.	

**NAS 5-26395 State Univ of New York - Stony Brook 3834**  
Energetic particle acceleration research

Period	Obligations	
12/04/80-11/05/83	FY83:	TOTAL: \$77,604
Prin. Invest.	NASA Tech. Officer	CASE Category
Forman, M. A.	GSFC/Ramaty, R.	13-Physics

**NAS 8-32904 State Univ of New York - Stony Brook 3835**  
Scientific investigations in support of the space telescope project

Period	Obligations	
02/01/78-12/31/84	FY83:	TOTAL: \$139,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Caldwell, J. J.	MSFC/O'dell, C. R.	11-Astronomy

**NCA 2-760101 State Univ of New York - Stony Brook 3836**  
An investigation of the effects of hot atom chemistry of minor constituents in the atmosphere of Jupiter and Saturn

Period	Obligations	
02/01/81-01/31/83	FY83:	TOTAL: \$54,360
Prin. Invest.	NASA Tech. Officer	CASE Category
Owens, T.	ARC/Chang, S.	31-Atmos Sci

**NCA 2-760301 State Univ of New York - Stony Brook 3837**  
The surfaces of Iapetus and Titan: Characterization by coupling satellite observations with spectroscopic measurements of synthetic materials

Period	Obligations	
02/01/83-01/31/84	FY83: \$29,985	TOTAL: \$29,985
Prin. Invest.	NASA Tech. Officer	CASE Category
Owen, T.	ARC/Chang, S.	31-Atmos Sci
Scattergood, T.		

**NCC 3-2 State Univ of New York - Stony Brook 3838**  
Analytic modeling of soot formation under fuel rich conditions

Period	Obligations	
07/01/79-12/30/84	FY83: \$39,364	TOTAL: \$198,908
Prin. Invest.	NASA Tech. Officer	CASE Category
Yang, C. H.	LERC/Brabbs, T. A.	12-Chemistry
Berlad, A. L.		

**NCC 5-7 State Univ of New York - Stony Brook 3839**  
Atmospheric pollution: Development and application

Period	Obligations	
04/09/79-04/30/84	FY83: \$74,747	TOTAL: \$328,712
Prin. Invest.	NASA Tech. Officer	CASE Category
Hogan, J. S.	GSFC/Stewart, R. W.	31-Atmos Sci
Hameed, S.		

**NCC 5-23 State Univ of New York - Stony Brook 3840**  
Planetary atmospheres research

Period	Obligations	
01/15/80-08/31/82	FY83:	TOTAL: \$282,167
Prin. Invest.	NASA Tech. Officer	CASE Category
Owen, T.	GSFC/Hansen, J. E.	31-Atmos Sci

**NGL 33-015-130 State Univ of New York - Stony Brook 3841**  
Lunar sample analysis

Period	Obligations	
02/11/71-05/31/83	FY83:	TOTAL: \$1,190,858
Prin. Invest.	NASA Tech. Officer	CASE Category
Lindsley, D. H.	JSC/Dietrich, J. W.	13-Physics

**NGR 33-015-139 State Univ of New York - Stony Brook 3842**  
Quantitative spectroscopic measurements on the principal constituents in planetary atmospheres

Period	Obligations	
04/12/71-05/31/84	FY83: \$46,404	TOTAL: \$443,368
Prin. Invest.	NASA Tech. Officer	CASE Category
Varanasi, P.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NASA'S UNIVERSITY PROGRAM  
NEW YORK (Continued)**

**NGR 33-015-141 State Univ of New York - Stony Brook 3843**  
Spectroscopic observations of the planets

Period	Obligations	
01/26/71-12/31/83	FY83: \$64,950	TOTAL: \$442,565
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Owen, T. C.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Evans, N.	

**NGR 33-015-180 State Univ of New York - Stony Brook 3844**  
Cosmic rays in interplanetary space

Period	Obligations	
01/07/74-06/30/82	FY83:	TOTAL: \$148,854
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Forman, M. A.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy

**NGT 33-015-801 State Univ of New York - Stony Brook 3845**  
Graduate student researchers program

Period	Obligations	
08/01/81-07/31/84	FY83: \$15,000	TOTAL: \$36,000
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Berlad, A. L.	HQ-LB/Owens, F. C.	46-Mech Engr

**NGT 33-015-802 State Univ of New York - Stony Brook 3846**  
Graduate student researchers program

Period	Obligations	
09/01/82-08/31/84	FY83: \$15,000	TOTAL: \$28,000
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schubel, J.	HQ-LB/Owens, F. C.	54-Env Biology

**NSG 5250 State Univ of New York - Stony Brook 3847**  
Ultraviolet observations of planets, satellites and comets  
International Ultraviolet Explorer

Period	Obligations	
03/01/78-08/31/82	FY83:	TOTAL: \$70,821
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Owen, T.	GSFC/Bogges, A.	11-Astronomy

**NSG 7270 State Univ of New York - Stony Brook 3848**  
Cells, embryos and development in space

Period	Obligations	
09/01/76-11/30/83	FY83: \$80,000	TOTAL: \$497,570
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Krikorian, A. D.	HQ-EB/Halstead, T. W.	51-Biological Sci
Steward, F. C.		

**NSG 7286 State Univ of New York - Stony Brook 3849**  
Infrared spectroscopy of Jupiter and Saturn

Period	Obligations	
09/01/76-06/30/84	FY83: \$29,384	TOTAL: \$187,032
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Knacke, R. F.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Murphy, R. E.	

**NSG 7320 State Univ of New York - Stony Brook 3850**  
Theoretical planetary physics

Period	Obligations	
04/01/77-02/29/84	FY83:	TOTAL: \$189,179
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Caldwell, J. J.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Brinton, H. C.	

**NSG 7553 State Univ of New York - Stony Brook 3851**  
Outer solar system nomenclature

Period	Obligations	
04/01/79-04/31/84	FY83: \$9,220	TOTAL: \$45,052
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Owens, T.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAG 2-162 State Univ of New York - Downstate 3852**  
Med Ctr  
Mechanism and control of disuse atrophy in skeletal muscle

Period	Obligations	
03/01/82-02/28/84	FY83: \$49,710	TOTAL: \$99,595
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Etlinger, J. D.	ARC/Ellis, S.	59-Life Sci, NEC

**NAS 5-27595 State Univ of New York - Upstate Med 3853**  
Ctr  
Simulation study of effects of scan angle and spectral instrument response on sensor output and target contrast ratio

Period	Obligations	
04/08/83-08/07/84	FY83: \$50,000	TOTAL: \$50,000
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Duggin, M. J.	GSFC/Oseroff, H.	39-Env Sci, NEC

**NAG 5-113 State Univ of New York Col - Geneseo 3854**  
Simultaneous in-eclipse ultraviolet observations of early-type eclipsing

Period	Obligations	
10/01/80-09/30/82	FY83:	TOTAL: \$1,120
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Meisel, D. D.	GSFC/Corrigan, J. P.	11-Astronomy

**NAS 5-27685 State Univ of New York Col - Geneseo 3855**  
Infrared interference filter study

Period	Obligations	
05/20/83-09/30/83	FY83: \$14,790	TOTAL: \$14,790
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alley, P. W.	GSFC/Heaney, J. B.	13-Physics

**NAG 1-131 State Univ of New York Col - Oneonta 3856**  
Transonic normal shock-laminar boundary layer interactions with suction

Period	Obligations	
01/01/81-08/31/83	FY83: \$66,000	TOTAL: \$159,500
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ram, R. B.	LARC/Allison, D. O.	41-Aero Engr

**NAS 5-25967 State Univ of New York Col - Oneonta 3857**  
Demonstration project to evaluate the utility of operational applications of LANDSAT to county and local government agencies

Period	Obligations	
02/05/80-12/31/82	FY83:	TOTAL: \$13,057
<i>Pnn Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Baumann, P. R.	GSFC/Kerber, A. G.	39-Env Sci, NEC

**NASA'S UNIVERSITY PROGRAM  
NEW YORK (Continued)**

**NSG 5077 State Univ of New York College - Purchase 3858**

Spectral and Monte Carlo predictability studies

Period	Obligations	
09/01/75-12/31/83	FY83 \$5,000	TOTAL: \$161,469
Prin Invest	NASA Tech Officer	CASE Category
Tonenbaum, J.	GSFC/Haleem, M.	31-Atmos Sci
Reddi, M.		

**NAG 2-117 University of Rochester 3865**

Development of an infrared CCD for use in astronomy

Period	Obligations	
06/01/81-10/31/83	FY83:	TOTAL: \$147,169
Prin Invest	NASA Tech Officer	CASE Category
Forrest, W. J.	ARC/Goebel, J. H.	11-Astronomy
Pipher, J. L.	ARC/McCreight, C. R.	
Boyd, R. W.		

**NAG 1-129 Syracuse University 3859**

Aeroacoustics of a porous plug jet noise suppressor

Period	Obligations	
01/01/81-08/31/83	FY83 \$6,000	TOTAL: \$97,402
Prin Invest	NASA Tech Officer	CASE Category
Dosanjh, D.	LARC/Seiner, J. M.	41-Aero Engr
	LARC/Norum, T. D.	

**NAG 3-414 University of Rochester 3866**

Energy transfer using localized plasma resonances

Period	Obligations	
03/25/83-03/24/84	FY83: \$73,360	TOTAL: \$73,360
Prin Invest	NASA Tech Officer	CASE Category
Hall, D. G.	LERC/Anderson, L. M.	19-Phys Sci, NEC

**NAG 3-202 Syracuse University 3860**

Optical records of supersonic coaxial jet flows and shock structure

Period	Obligations	
07/27/81-08/31/82	FY83:	TOTAL: \$20,000
Prin Invest	NASA Tech Officer	CASE Category
Dosanjh, D. S.	MSFC/Stone, J. R.	41-Aero Engr

**NAG 5-46 University of Rochester 3867**

Ultraviolet observations of the continua of nebulae and their exciting stars

Period	Obligations	
05/01/80-07/31/82	FY83:	TOTAL: \$28,538
Prin Invest	NASA Tech Officer	CASE Category
Heller, H. L.	GSFC/Kondo, Y.	11-Astronomy

**NAG 3-348 Syracuse University 3861**

Analysis of fatigue crack growth mechanism and oxidation and fatigue lives at elevated temperatures

Period	Obligations	
10/30/82-10/28/84	FY83 \$182,846	TOTAL: \$182,846
Prin Invest	NASA Tech Officer	CASE Category
Liu, H. W.	LERC/Shannon, J. L., Jr.	47-Materials Engr
	LERC/Hirschborg, M. H.	

**NAS 8-34892 University of Rochester 3868**

Blood flow in small vessels

Period	Obligations	
10/21/82-07/20/85	FY83: \$190,000	TOTAL: \$190,000
Prin Invest	NASA Tech Officer	CASE Category
Cokelet, G. R.	MSFC/Moore, W. W., Jr.	
Meiselman, H. J.	MSFC/Snyder, R. S.	59-Life Sci, NEC
Goldsmith, H. L.		

**NAGW 466 Syracuse University 3862**

Environmental degradation of materials Surface chemistry related to stress corrosion cracking

Period	Obligations	
05/15/83-05/14/84	FY83 \$32,729	TOTAL: \$32,729
Prin Invest	NASA Tech Officer	CASE Category
Schwarz, J. A.	HQ-EN/Gordon, P.	43-Chem Engr
Pasco, R. W.	HQ-EN/Oran, W. A.	

**NSG 2343 University of Rochester 3869**

Determination of a galactic gradient: Measurements of the fine structure lines of ARII, and SIII in galactic HII regions

Period	Obligations	
10/01/78-10/31/84	FY83: \$41,617	TOTAL: \$149,963
Prin Invest	NASA Tech Officer	CASE Category
Pipher, J. L.	ARC/Haughney, L. C.	11-Astronomy
Heller, H. L.		

**NSG 1611 Syracuse University 3863**

Surface Acoustic Waves (SAW)/silicon monolithic programmable sensor/processor

Period	Obligations	
05/01/79-06/30/83	FY83	TOTAL: \$305,339
Prin Invest	NASA Tech Officer	CASE Category
Kowel, S. T.	LARC/Stermor, R. L., Jr.	45-Elec Engr
Kornreich, P. G.		

**NSG 7562 University of Rochester 3870**

Basic research in sunspot dynamics

Period	Obligations	
10/01/78-10/31/83	FY83: \$25,900	TOTAL: \$106,304
Prin Invest	NASA Tech Officer	CASE Category
Thomas, J. H.	HQ-EZ/Chipman, E. G.	13-Physics

**NAG 1-312 University of Rochester 3864**

In-line far-field holographic velocimetry

Period	Obligations	
02/01/83-10/31/83	FY83: \$19,431	TOTAL: \$19,431
Prin Invest	NASA Tech Officer	CASE Category
Thompson, B. J.	LARC/Weinstein, L. M.	41-Aero Engr
Malyak, P.	LARC/Burner, A. W.	

**NSG 7454 York College 3871**

Irradiation effects on surface of Moon, Mercury, asteroids and solar system bodies

Period	Obligations	
06/01/78-11/30/81	FY83:	TOTAL: \$106,251
Prin Invest	NASA Tech Officer	CASE Category
Spergel, M. S.	HQ-LC/Pohly, J. G.	13-Physics



# **NASA'S UNIVERSITY PROGRAM NORTH CAROLINA**

## **NORTH CAROLINA**

**NAG 1-70 Duke University 3872**  
Design of the hybrid automated reliability predictor  
*Period* 06/01/80-09/30/83 *Obligations* FY83: \$48,761 TOTAL: \$113,174  
*Prin Invest* Trivedi, K. S. *NASA Tech Officer* LARC/Bavuso, S. J. *CASE Category* 29-Math/Cmputer, NEC  
Geist, R. M. LARC/Lupton, A. O.

**NAG 1-165 Duke University 3873**  
Study of tool for prediction and evaluation of performance of application software  
*Period* 04/01/81-08/31/83 *Obligations* FY83: TOTAL: \$80,386  
*Prin Invest* Smith, C. U. *NASA Tech Officer* LARC/Salley, G. C. *CASE Category* 22-Computer Science

**NAG 1-218 Duke University 3874**  
Microelectronic hardware for selected engineering analysis functions  
*Period* 10/01/81-12/31/83 *Obligations* FY83: TOTAL: \$65,975  
*Prin Invest* Loendorf, D. D. *NASA Tech Officer* LARC/Fulton, R. E. *CASE Category* 29-Math/Cmputer, NEC  
Patrick, M. L. LARC/Peebles, S. W.

**NAG 2-128 Duke University 3875**  
Cryogenic experiments on fluid helium under low gravity  
*Period* 08/01/81-08/31/82 *Obligations* FY83: TOTAL: \$29,893  
*Prin Invest* Meyer, H. *NASA Tech Officer* LARC/Brooks, W. F. *CASE Category* 13-Physics

**NAG 2-222 Duke University 3876**  
Cryogenic experiments on fluid helium under low gravity  
*Period* 11/01/82-10/31/83 *Obligations* FY83: \$23,000 TOTAL: \$23,000  
*Prin Invest* Meyer, H. *NASA Tech Officer* ARC/Brooks, W. F. *CASE Category* 13-Physics  
ARC/Kittel, P.

**NAGW 189 Duke University 3877**  
Millimeter and submillimeter wave spectroscopic laboratory studies of interstellar molecule  
*Period* 06/01/81-05/31/84 *Obligations* FY83: \$52,581 TOTAL: \$157,550  
*Prin Invest* Herbst, E. *NASA Tech Officer* HQ-EZ/Stencel, R. E. *CASE Category* 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NCA 2-206301 Duke University 3878**  
Formulation of a mathematical model of chlorella gas-exchange kinetics in open and closed culture systems  
*Period* 04/01/83-03/31/85 *Obligations* FY83: \$20,058 TOTAL: \$20,058  
*Prin Invest* Quinlan, A. V. *NASA Tech Officer* ARC/MacElroy, R. D. *CASE Category* 59-Life Sci, NEC

**NSG 3157 Duke University 3879**  
Design feasibility of high-power lightweight dc-to-dc converters for space power applications  
*Period* 07/01/77-12/31/82 *Obligations* FY83 TOTAL: \$384,660  
*Prin Invest* Wilson, T. G. *NASA Tech Officer* LERC/Kolecki, J. C. *CASE Category* 45-Elec Engr  
LERC/Myers, I. T.

**NSG 3160 Duke University 3880**  
Acceleration of convergence  
*Period* 06/01/77-07/28/84 *Obligations* FY83 \$25,209 TOTAL: \$114,867  
*Prin Invest* Smith, D. A. *NASA Tech Officer* LERC/Ford, W. E. *CASE Category* 21-Mathematics

**NSG 7540 Duke University 3881**  
Millimeter and submillimeter spectroscopy of molecules of atmospheric importance  
*Period* 03/01/79-02/28/84 *Obligations* FY83 \$64,547 TOTAL: \$268,390  
*Prin Invest* Delucia, F. C. *NASA Tech Officer* HQ-EB/Watson, R. T. *CASE Category* 31-Atmos Sci  
HQ-EB/Chan, K. R.

**NAG 1-82 North Carolina A&T State University 3882**  
System compaction and integration-lasers  
*Period* 07/14/80-06/30/82 *Obligations* FY83 TOTAL: \$50,000  
*Prin Invest* Yu, C. *NASA Tech Officer* LARC/Hoell, J. M. *CASE Category* 19-Phys Sci, NEC  
LARC/Brockman, P.

**NAG 1-403 North Carolina A&T State University 3883**  
Heteroepitaxial growth of III-V semiconductor compounds by metal-organic chemical vapor deposition for device applications  
*Period* 10/01/83-09/30/84 *Obligations* FY83 \$113,560 TOTAL: \$113,560  
*Prin Invest* Collis, W. J. *NASA Tech Officer* LARC/Clark, I. O. *CASE Category* 45-Elec Engr  
Iyer, S. LARC/Magee, C. J.

**NAG 1-404 North Carolina A&T State University 3884**  
Effect of fatigue and thermal loads on graphite fiber-reinforced glass matrix composites  
*Period* 10/01/83-09/30/84 *Obligations* FY83 \$133,330 TOTAL: \$133,330  
*Prin Invest* Avva, V. S. *NASA Tech Officer* LARC/Dicus, D. L. *CASE Category* 47-Materials Engr  
Sankar, J. Craft, W. J.

**NAG 1-405 North Carolina A&T State University 3885**  
Dynamics and control of orbiting grid structures and the synchronously deployable beam  
*Period* 10/01/83-09/30/84 *Obligations* FY83 \$108,950 TOTAL: \$108,950  
*Prin Invest* Abu-saba, E. *NASA Tech Officer* LARC/Montgomery, R. C. *CASE Category* 42-Astro Engr

# **NASA'S UNIVERSITY PROGRAM** **NORTH CAROLINA (Continued)**

**NAG 1-406 North Carolina A&T State University 3886**  
 Study of the effect of non-sand-grain surface roughness on heat transfer and drag in subsonic boundary layer flow

Period	Obligations	
10/01/83-09/30/84	FY83: \$95,808	TOTAL: \$95,808
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Klett, D. E.	LARC/Lindemann, A. M.	41-Aero Engr
Goswami, D. Y.	LARC/Hefner, J. N.	
Chauhan, R. S.		

**NAG 1-407 North Carolina A&T State University 3887**  
 Mid infrared laser heterodyne spectroscopy system packaging using flexible waveguides

Period	Obligations	
10/01/83-09/30/84	FY83: \$29,964	TOTAL: \$29,964
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yu, C.	LARC/Hoell, J. M.	19-Phys Sci, NEC

**NAG 1-408 North Carolina A&T State University 3888**  
 Development of computer models for correlating data of film cooling of nose cone under hypersonic flow

Period	Obligations	
10/01/83-09/30/84	FY83: \$63,787	TOTAL: \$63,787
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Goswami, D. Y.	LARC/Nowak, R. J.	46-Mech Engr
Min, T. C.	LARC/Hunt, L. R.	
Sharpe, L.		

**NCA 2-545201 North Carolina A&T State University 3889**  
 North Carolina A and T student Space Shuttle program/design phase

Period	Obligations	
06/01/82-07/31/84	FY83: \$43,987	TOTAL: \$67,987
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ahrens, S. T.	ARC/Berry, W. E.	51-Biological Sci

**NSG 1390 North Carolina A&T State University 3890**  
 Material growth and characterization of III-V compounds for solid state devices

Period	Obligations	
02/01/77-11/30/83	FY83: \$150,000	TOTAL: \$900,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stefanakos, E. K.	LARC/Magee, C. J.	45-Elec Engr
Collis, W. J.	LARC/Hendricks, H. D.	
Abul-fadi, A.		

**NSG 1516 North Carolina A&T State University 3891**  
 Patterns of residual stresses within complex welded steel structures

Period	Obligations	
04/15/78-01/14/83	FY83:	TOTAL: \$89,043
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Botros, B. M.	LARC/Buckley, J. D.	47-Materials Engr

**NAG 1-187 North Carolina Central University 3892**  
 Laser heterodyne spectroscopy of stratospheric gases

Period	Obligations	
06/01/81-08/31/84	FY83:	TOTAL: \$84,320
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jones, C. R.	LARC/Kendall, B. M.	13-Physics
Dutta, J. M.		

**NAG 1-20 North Carolina State Univ. - Raleigh 3893**  
 Studies of image analysis

Period	Obligations	
02/01/80-12/31/83	FY83: \$52,107	TOTAL: \$254,705
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Snyder, W. E.	LARC/Benz, H. F.	45-Elec Engr
Rajala, S. A.		

**NAG 1-103 North Carolina State Univ. - Raleigh 3894**  
 Shape preserving approximation with application to computer aided geometric design

Period	Obligations	
10/01/80-09/30/83	FY83: \$23,000	TOTAL: \$81,764
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McAllister, D. F.	LARC/Schiess, J. R.	29-Math/Computer, NEC
	LARC/Shoosmith, J. N.	

**NAG 1-194 North Carolina State Univ. - Raleigh 3895**  
 Investigation of fault-handling capabilities and limitations of fault-tolerant computer architecture

Period	Obligations	
06/01/81-08/31/82	FY83:	TOTAL: \$20,862
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gault, J. W.	LARC/Lupton, A. O.	45-Elec Engr
	LARC/Palumbo, D. L.	

**NAG 1-244 North Carolina State Univ. - Raleigh 3896**  
 Numerical solutions of the complete Navier Stokes equations

Period	Obligations	
01/01/82-08/31/85	FY83: \$92,500	TOTAL: \$171,430
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hassan, H. A.	LARC/Harris, J. E.	41-Aero Engr
Dejarnette, F. R.	LARC/Rudy, D. H.	
Walters, R. W.		

**NAG 1-285 North Carolina State Univ. - Raleigh 3897**  
 Material systems for infrared detection and visible laser emission

Period	Obligations	
06/01/82-07/31/84	FY83: \$49,957	TOTAL: \$99,269
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bedair, S. M.	LARC/Magee, C. J.	13-Physics
Hauser, J. R.	LARC/Clark, I. O.	
Schreiner, A. F.		

**NAG 1-354 North Carolina State Univ. - Raleigh 3898**  
 Zone leveling and solution growth of complex compound semiconductors in space

Period	Obligations	
05/01/83-04/30/84	FY83: \$92,000	TOTAL: \$92,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bachmann, K. J.	ARC/Crouch, R. K.	19-Phys Sci, NEC
	ARC/Fripp, A. L.	

**NAG 3-189 North Carolina State Univ. - Raleigh 3899**  
 The effects of supersonic jet screech tone reduction on broadband shock associated noise

Period	Obligations	
09/01/81-02/28/83	FY83:	TOTAL: \$51,227
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nagel, R. T.	LERC/Stone, J. R.	41-Aero Engr

**NASA'S UNIVERSITY PROGRAM  
NORTH CAROLINA (Continued)**

**NAG 3-229 North Carolina State Univ. - Raleigh 3900**  
Theoretical study of V/STOL deflected thrust nozzles  
*Period* *Obligations*  
11/30/81-05/28/83 FY83: \$4,013 TOTAL: \$42,108  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Boles, M. A. LERC/Burstadt, P. L. 41-Aero Engr

**NAG 3-343 North Carolina State Univ. - Raleigh 3901**  
Theoretical evaluation of engine inlet drooping cowl lip designs for supersonic V/STOL aircraft  
*Period* *Obligations*  
01/01/83-06/30/84 FY83: TOTAL: \$50,114  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Boles, M. LERC/Hwang, D. P. 41-Aero Engr

**NAGW 367 North Carolina State Univ. - Raleigh 3902**  
Geographus variation in the relationships of temperatures  
*Period* *Obligations*  
09/01/82-08/31/83 FY83: TOTAL: \$50,690  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kamykowski, D. HQ-EE/Carder, K. L. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAS 1-17229 North Carolina State Univ. - Raleigh 3903**  
Preliminary design of high-altitude platform aeroelastic wind-tunnel models for use in the Langley transonic dynamics tunnel  
*Period* *Obligations*  
12/03/82-11/17/83 FY83: \$15,000 TOTAL: \$15,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Turner, C. D. LARC/Ricketts, R. H. 41-Aero Engr

**NAS 5-26157 North Carolina State Univ. - Raleigh 3904**  
Magnetic fields monitor satellite science investigation data and aeromagnetic data in the Eastern Piedmont of the United States  
*Period* *Obligations*  
05/01/80-12/01/82 FY83: TOTAL: \$37,718  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Won, I. J. GSFC/Oseroff, H. 32-Geological Sci

**NAS 5-26510 North Carolina State Univ. - Raleigh 3905**  
Photometric observations supporting sounding rockets 33.019 and 33.020  
*Period* *Obligations*  
03/06/81-12/09/81 FY83: TOTAL: \$5,530  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Manring, E. R. GSFC/Heppner, J. P. 31-Atmos Sci

**NAS 5-27669 North Carolina State Univ. - Raleigh 3906**  
Photometric observation in support of sounding rocket chemical release  
*Period* *Obligations*  
05/10/83-12/31/83 FY83: \$7,600 TOTAL: \$7,600  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Manring, E. R. GSFC/Ledley, B. 19-Phys Sci, NEC

**NAS 6-3018 North Carolina State Univ. - Raleigh 3907**  
Perform statistical modelling of surface water movements using radar altimeter data  
*Period* *Obligations*  
07/01/79-09/30/84 FY83: \$14,692 TOTAL: \$100,651  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tung, C. C. GSFC/Huang, N. E. 33-Oceanography  
GSFC/Long, S. R.

**NCC 1-22 North Carolina State Univ. - Raleigh 3908**  
Computational fluid mechanics  
*Period* *Obligations*  
06/15/79-09/14/85 FY83: \$180,138 TOTAL: \$650,062  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hassan, H. A. LARC/South, J. C., Jr. 41-Aero Engr  
Dejarnette, F. R. LARC/Foughner, J. T., Jr.

**NCC 1-46 North Carolina State Univ. - Raleigh 3909**  
Investigation of the aerodynamic characteristics leading edge vortex flaps  
*Period* *Obligations*  
09/18/80-09/30/83 FY83: \$25,885 TOTAL: \$94,849  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dejarnette, F. R. LARC/Schoonover, W. E., Jr. 41-Aero Engr

**NCC 1-49 North Carolina State Univ. - Raleigh 3910**  
Development of a surface fitting program for computer-aided design systems  
*Period* *Obligations*  
02/01/81-06/30/83 FY83: TOTAL: \$78,289  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Perkins, J. N. LARC/Wilhite, A. W. 21-Mathematics  
LARC/Wurster, K. E.

**NCC 1-54 North Carolina State Univ. - Raleigh 3911**  
Kinetics of direct solar pumped lasers  
*Period* *Obligations*  
07/01/81-12/31/82 FY83: TOTAL: \$30,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hassan, H. A. LARC/Meador, W. E. 13-Physics  
LARC/Conway, E. J.

**NCC 2-101 North Carolina State Univ. - Raleigh 3912**  
Plant growth in controlled environments in response to characteristics of nutrient solutions  
*Period* *Obligations*  
01/01/81-12/31/83 FY83: \$46,383 TOTAL: \$136,537  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Raper, C. D., Jr. ARC/MacElroy, R. 55-Agriculture Sci

**NGT 34-002-800 North Carolina State Univ. - Raleigh 3913**  
NASA graduate student researchers program  
*Period* *Obligations*  
06/01/83-05/31/84 FY83: \$12,300 TOTAL: \$12,300  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Turner, C. D. HQ-LB/Owens, F. C. 41-Aero Engr

# **NASA'S UNIVERSITY PROGRAM** **NORTH CAROLINA (Continued)**

**NSG 1355 North Carolina State Univ. - Raleigh 3914**  
A study of real-time computer graphic display technology for  
aeronautical applications

Period	Obligations
01/01/77-09/30/82	FY83: TOTAL: \$116,975
Prin. Invest.	NASA Tech. Officer CASE Category
Rajala, S. A.	LARC/Batson, V. M. 45-Elec Engr
	LARC/Hatfield, J. J.

**NSG 1562 North Carolina State Univ. - Raleigh 3915**  
Study of the effects of high energy radiation on the mechanical  
properties of graphite-fiber reinforced epoxy resins

Period	Obligations
10/01/78-12/31/83	FY83: \$75,000 TOTAL: \$286,539
Prin. Invest.	NASA Tech. Officer CASE Category
Fornes, R. E.	LARC/Long, E. R., Jr. 13-Physics
Memory, J. D.	
Gilbert, R. D.	

**NSG 1584 North Carolina State Univ. - Raleigh 3916**  
Optimum nacelle shapes and flow port locations for minimum  
drag and effective engine cooling for general aviation aircraft

Period	Obligations
01/01/79-05/15/82	FY83: TOTAL: \$166,294
Prin. Invest.	NASA Tech. Officer CASE Category
Smetana, F. O.	LARC/Holbrook, G. T. 41-Aero Engr
	LARC/Holmes, B. J.

**NSG 1588 North Carolina State Univ. - Raleigh 3917**  
Large reflector antenna analysis research

Period	Obligations
01/01/79-01/31/84	FY83: \$58,045 TOTAL: \$247,279
Prin. Invest.	NASA Tech. Officer CASE Category
Kauffman, J. F.	LARC/Bailey, M. C. 45-Elec Engr
	LARC/Beck, F. B.

**NAG 1-181 University of North Carolina - Chapel Hill 3918**  
Biogeochemistry of methane production in wetland soils

Period	Obligations
05/01/81-10/31/83	FY83: TOTAL: \$30,700
Prin. Invest.	NASA Tech. Officer CASE Category
Martens, C. S.	LARC/Harriss, R. C. 39-Env Sci, NEC
	LARC/Sebacher, D. I.

**NAG 2-181 University of North Carolina - Chapel Hill 3919**  
Biochemical changes in bone in a model of weightlessness

Period	Obligations
06/01/82-12/31/83	FY83: \$62,998 TOTAL: \$114,998
Prin. Invest.	NASA Tech. Officer CASE Category
Mgchanic, G.	ARC/Young, D. 56-Medical Sciences

**NGT 34-003-800 University of North Carolina - Chapel Hill 3920**  
Graduate student researchers program

Period	Obligations
05/17/82-05/16/84	FY83: \$2,000 TOTAL: \$23,000
Prin. Invest.	NASA Tech. Officer CASE Category
Martens, C. S.	HQ-LB/Owens, F. C. 39-Env Sci, NEC

**NGT 34-003-801 University of North Carolina - Chapel Hill 3921**  
NASA graduate student researchers program

Period	Obligations
04/15/83-04/14/84	FY83: \$15,000 TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer CASE Category
Christiansen, W. A.	HQ-LB/Owens, F. C. 11-Astronomy

**NAGW 96 Wake Forest University 3922**  
A study of the mechanism of thermomorphogenesis in plants

Period	Obligations
08/01/80-11/01/83	FY83: TOTAL: \$152,194
Prin. Invest.	NASA Tech. Officer CASE Category
Jaffe, M. J.	HQ-EB/Halstead, T. W. 51-Biological Sci

**NAS 2-10523 Wake Forest University 3923**  
Life science experiment ARC 781-127, correlation macro and  
microcirculatory alterations during weightlessness

Period	Obligations
01/17/80-03/31/84	FY83: \$188,086 TOTAL: \$278,831
Prin. Invest.	NASA Tech. Officer CASE Category
Hutchins, P. M.	ARC/Ferandin, J. 51-Biological Sci
	ARC/Lee, R. C.

**NCC 1-55 Wake Forest University 3924**  
Quantum chemical study of methane oxidation species

Period	Obligations
06/04/81-06/03/84	FY83: TOTAL: \$46,112
Prin. Invest.	NASA Tech. Officer CASE Category
Jackels, C. F.	LARC/Phillips, D. H. 12-Chemistry
	LARC/Rogowski, R. S.

## **NORTH DAKOTA**

**NAGW 151 University of North Dakota 3925**  
Photogeologic mapping of the Galilean satellite Io

Period	Obligations
12/15/80-12/14/83	FY83: TOTAL: \$22,503
Prin. Invest.	NASA Tech. Officer CASE Category
Karner, F. R.	HQ-EL/Boyce, J. M. 32-Geological Sci

## **OHIO**

**NAG 5-259 Bowling Green State University 3926**  
Time variations of emission lines in Seyfert galaxies

Period	Obligations
03/01/83-08/31/84	FY83: TOTAL: \$1,000
Prin. Invest.	NASA Tech. Officer CASE Category
Gregory, S. A.	GSFC/Kondo, Y. 11-Astronomy
Plak, R. L.	
Stoner, R. E.	

**NASA'S UNIVERSITY PROGRAM  
OHIO (Continued)**

**NAG 5-331 Bowling Green State University 3927**  
Analysis of time variability emission lines in selected galaxies  
*Period* *Obligations*  
06/16/83-06/15/84 FY83: \$9,000 TOTAL: \$9,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stoner, R. E. GSFC/Kondo, Y. 11-Astronomy  
Ptak, R.

**NAG 1-304 Case Western Reserve University 3928**  
Application of the boundary integral method to the study of chevron-notched specimens  
*Period* *Obligations*  
03/01/83-08/31/83 FY83: \$25,620 TOTAL: \$25,620  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mendelson, A. LARC/Newman, J. C., Jr. 46-Mech Engr  
LARC/Davidson, J. R.

**NAG 1-328 Case Western Reserve University 3929**  
Optimal measurement strategies for laser anemometers in wind tunnels  
*Period* *Obligations*  
02/09/83-02/08/84 FY83: \$65,347 TOTAL: \$65,347  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Edwards, R. V. LARC/Meyers, J. F., Jr. 49-Engr, NEC  
LARC/Hunter, W. W., Jr.

**NAG 2-82 Case Western Reserve University 3930**  
Stabilizability and eigenvale structure for linear systems representing the dynamics of twin-lift helicopter system  
*Period* *Obligations*  
01/01/81-10/31/83 FY83: \$30,000 TOTAL: \$80,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Martin, C. ARC/Meyer, G. 49-Engr, NEC

**NAG 3-2 Case Western Reserve University 3931**  
Improved and efficient laser anemometers  
*Period* *Obligations*  
11/01/79-10/28/83 FY83: TOTAL: \$243,818  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Edwards, R. V. LERC/Seasholtz, R. G. 49-Engr, NEC

**NAG 3-24 Case Western Reserve University 3932**  
Diamond II a resistivity, dielectric constant, and tangent delta from 10ghz-100ghz as well as thermal conductivity from OC to 500c  
*Period* *Obligations*  
01/07/80-01/03/84 FY83: \$60,002 TOTAL: \$229,246  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hazony, D. LERC/Kosmahl, H. G. 13-Physics  
LERC/Kavanagh, F. E.

**NAG 3-30 Case Western Reserve University 3933**  
Influence of cobalt on the microstructure and mechanical properties of M-247  
*Period* *Obligations*  
01/28/80-01/26/84 FY83: TOTAL: \$87,345  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ebert, L. J. LERC/Gray, H. R. 47-Materials Engr

**NAG 3-39 Case Western Reserve University 3934**  
Constitutive equations for analysis and design of turbine engine hot section components  
*Period* *Obligations*  
04/01/80-03/30/83 FY83: TOTAL: \$125,004  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Manson, S. S. LERC/Thompson, R. L. 47-Materials Engr

**NAG 3-46 Case Western Reserve University 3935**  
Crack initiation and early propagation under thermo-mechanical loading  
*Period* *Obligations*  
03/15/80-04/29/83 FY83: TOTAL: \$150,066  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Manson, S. S. LERC/Halford, G. R. 47-Materials Engr  
LERC/Hirschberg, M. H.

**NAG 3-58 Case Western Reserve University 3936**  
Evolution and adherence of oxide films formed on NiAl and NiCrAl alloys  
*Period* *Obligations*  
06/15/80-09/15/83 FY83: TOTAL: \$59,940  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ebert, L. J. LERC/Smialek, J. L. 47-Materials Engr

**NAG 3-61 Case Western Reserve University 3937**  
Model development for shock wave boundary layer interaction experiment  
*Period* *Obligations*  
04/24/80-11/21/83 FY83: \$22,420 TOTAL: \$108,400  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Greber, I. LERC/Hingst, W. R. 41-Aero Engr

**NAG 3-80 Case Western Reserve University 3938**  
Planar multijunction high voltage solar cells  
*Period* *Obligations*  
06/02/80-09/29/83 FY83: TOTAL: \$128,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kapoor, V. J. LERC/Evans, J. C. 13-Physics  
Ko, W. H.

**NAG 3-97 Case Western Reserve University 3939**  
Mass and heat transfer characteristics of melt metals  
*Period* *Obligations*  
09/08/80-11/01/83 FY83: TOTAL: \$144,575  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dybbs, A. LERC/Liebert, C. H. 46-Mech Engr

**NAG 3-98 Case Western Reserve University 3940**  
Application of photoacoustic techniques to the study of jet fuel residue  
*Period* *Obligations*  
09/22/80-05/20/83 FY83: TOTAL: \$107,986  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Claspy, P. C. LERC/Seng, G. T. 12-Chemistry

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 3-102 Case Western Reserve University 3941**  
 Experiments on viscous flows on supersonic streams in XI Lewis  
 supersonic wind tunnel  
*Period Obligations*  
 09/15/80-10/14/83 FY83: TOTAL: \$60,200  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Greber, I. LERC/Hingst, W. R. 41-Aero Engr

**NAG 3-115 Case Western Reserve University 3942**  
 Effect of morphological and mechanical parameters of ion  
 sputters materials on the gingival seal of an oral implant model  
*Period Obligations*  
 11/01/80-09/30/83 FY83: TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hottel, T. LERC/Kerslake, W. R. 56-Medical Sciences

**NAG 3-158 Case Western Reserve University 3943**  
 Relating NMR parameters to polymer mechanical properties  
*Period Obligations*  
 02/25/81-02/22/84 FY83: \$57,037 TOTAL: \$171,679  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ritchey, W. M. LERC/Lauver, R. W. 12-Chemistry

**NAG 3-163 Case Western Reserve University 3944**  
 Developments of pressure modulator radiometer monomers and  
 polymers: Improving performance of pressure modulator  
 radiometer systems  
*Period Obligations*  
 03/03/81-03/31/84 FY83: \$44,998 TOTAL: \$128,103  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ritchey, W. M. LERC/Serafini, T. T. 12-Chemistry  
 Sukenik, C. N.

**NAG 3-171 Case Western Reserve University 3945**  
 Research on jet entrainment  
*Period Obligations*  
 04/04/81-08/31/82 FY83: TOTAL: \$47,390  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Greber, I. LERC/Riddlerough, S. M. 41-Aero Engr

**NAG 3-187 Case Western Reserve University 3946**  
 Super Schottky mixer and detectors in beam lead technology  
*Period Obligations*  
 06/01/81-04/30/83 FY83: TOTAL: \$49,516  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Pyee, M. M. LERC/Haugland, E. H. 45-Elec Engr  
 Thompson, E. T. LERC/Connolly, D. J.

**NAG 3-191 Case Western Reserve University 3947**  
 Growth of diamond-like carbon films for electronic application  
*Period Obligations*  
 06/22/81-01/23/84 FY83: \$79,628 TOTAL: \$203,335  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Angus, J. C. LERC/Domitz, S. 43-Chem Engr  
 LERC/Banks, B.

**NAG 3-217 Case Western Reserve University 3948**  
 Vapor phase diamond growth technology: Rheed analysis  
*Period Obligations*  
 10/15/81-10/14/82 FY83: TOTAL: \$25,912  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Mann, J. LARC/Kolecki, J. C. 13-Physics  
 Guda, L. LARC/Banks, B. A.

**NAG 3-218 Case Western Reserve University 3949**  
 Qualitative and quantitative study of fatigue damage in nickel  
*Period Obligations*  
 12/05/81-12/03/83 FY83: \$64,440 TOTAL: \$124,560  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Welsch, G. E. LERC/Miner, R. V. 47-Materials Engr  
 McGervey, J. D. LERC/Hirschberg, M. H.

**NAG 3-219 Case Western Reserve University 3950**  
 Electrochemical studies of redox systems for energy storage  
*Period Obligations*  
 12/05/81-12/03/83 FY83: \$88,000 TOTAL: \$168,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Yeager, E. B. LERC/Reid, M. A. 12-Chemistry  
 Scherson, D. A. LERC/Thaller, L. H.  
 Tryk, D. A.

**NAG 3-223 Case Western Reserve University 3951**  
 Fatigue crack and associated damage propagation a fundamental  
 approach  
*Period Obligations*  
 11/05/81-11/03/83 FY83: \$88,272 TOTAL: \$138,285  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Chudnovsky, A. LERC/Gross, B. 47-Materials Engr  
 LERC/Orange, T. W.

**NAG 3-224 Case Western Reserve University 3952**  
 Structure property relationships in zirconia-yttria thermal barrier  
 coatings  
*Period Obligations*  
 10/25/81-10/23/83 FY83: TOTAL: \$75,841  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Mitchell, T. E. LERC/Miller, R. A. 47-Materials Engr

**NAG 3-225 Case Western Reserve University 3953**  
 Study of fast wave electron beam devices for millimeter wave  
 generation  
*Period Obligations*  
 10/20/81-10/17/84 FY83: TOTAL: \$72,478  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ferendeci, A. M. LERC/Heighway, J. E. 45-Elec Engr  
 LERC/Dayton, J. A.

**NAG 3-230 Case Western Reserve University 3954**  
 Boundary layer transition in a disturbed environment  
*Period Obligations*  
 12/05/81-02/27/84 FY83: \$59,974 TOTAL: \$108,495  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Reshotko, E. LERC/Gaugler, R. E. 46-Mech Engr  
 LERC/Graham, R. W.

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 3-234 Case Western Reserve University 3955**  
Synthesis of soluble conducting polymers with reversible oxidation/reduction behavior

Period	Obligations
11/30/81-12/05/83	FY83: \$65,823 TOTAL: \$125,818
Prin. Invest.	NASA Tech. Officer CASE Category
Litt, M. H.	LERC/Abbey, K. M. 12-Chemistry
	LERC/Sheibley, D. W.

**NAG 3-235 Case Western Reserve University 3956**  
Behavior of combined dielectric metal in systems in a charge particle environment

Period	Obligations
12/05/81-10/31/83	FY83: TOTAL: \$63,752
Prin. Invest.	NASA Tech. Officer CASE Category
Gordon, W. L.	LERC/Purvis, C. K. 12-Chemistry
Hoffman, R. W.	LERC/Stevens, N. J.

**NAG 3-247 Case Western Reserve University 3957**  
Graduate research fellowship program

Period	Obligations
12/21/81-12/20/84	FY83: TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer CASE Category
Edwards, R. V.	LERC/Seasholtz, R. G. 49-Engr, NEC

**NAG 3-251 Case Western Reserve University 3958**  
Dilution jet experiments in compact combustor configurations

Period	Obligations
01/05/82-01/03/84	FY83: \$62,170 TOTAL: \$112,170
Prin. Invest.	NASA Tech. Officer CASE Category
Greber, I.	LERC/Riddlebaugh, S. M. 41-Aero Engr

**NAG 3-253 Case Western Reserve University 3959**  
Rapid reliability assessment and verification of electronic flight systems hardware using computerized reliability models

Period	Obligations
01/25/82-07/31/83	FY83: \$2,000 TOTAL: \$62,005
Prin. Invest.	NASA Tech. Officer CASE Category
Schultz, W. L.	LERC/Lalli, V. R. 45-Elec Engr
	LERC/Delaney, A. P.

**NAG 3-267 Case Western Reserve University 3960**  
Theory of carrier mobility in modulated doped GaAs AlXGa-X as superlattice structures

Period	Obligations
03/08/82-05/30/83	FY83: TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer CASE Category
Segall, B.	LERC/Haugland, E. J. 13-Physics
	LERC/Connolly, D. J.

**NAG 3-268 Case Western Reserve University 3961**  
Effect of reduction of strategic columbium addition in 718 alloy on the structure and properties

Period	Obligations
03/20/82-03/15/84	FY83: \$43,328 TOTAL: \$87,983
Prin. Invest.	NASA Tech. Officer CASE Category
Wallace, J. F.	LERC/Dreshfield, R. L. 47-Materials Engr

**NAG 3-270 Case Western Reserve University 3962**  
Interactive flowfield calculation in turbomachinery

Period	Obligations
03/15/82-10/14/83	FY83: \$27,645 TOTAL: \$70,645
Prin. Invest.	NASA Tech. Officer CASE Category
Reshotko, E.	LERC/Sockol, P. M. 41-Aero Engr
	LERC/Adamczyk, J. J.

**NAG 3-279 Case Western Reserve University 3963**  
Development of materials for resisto jet

Period	Obligations
04/21/82-04/19/84	FY83: \$67,888 TOTAL: \$133,821
Prin. Invest.	NASA Tech. Officer CASE Category
Hehemann, R. F.	LERC/Mirtich, M. J. 47-Materials Engr
Welsch, G.	LERC/Byers, D. C.
Halloran, J. W.	

**NAG 3-287 Case Western Reserve University 3964**  
Bonding of ceramic seals to structural ceramics

Period	Obligations
05/25/82-11/24/83	FY83: \$20,000 TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer CASE Category
Halloran, J. W.	LERC/Kiraly, L. J. 47-Materials Engr
Heuer, A. H.	LERC/Cawley, J. D.

**NAG 3-288 Case Western Reserve University 3965**  
Millimeter wave transmission systems and related devices

Period	Obligations
05/28/82-05/27/83	FY83: TOTAL: \$18,448
Prin. Invest.	NASA Tech. Officer CASE Category
Collins, R. E.	LERC/Downey, A. N. 45-Elec Engr

**NAG 3-290 Case Western Reserve University 3966**  
Combustor flame flash backs

Period	Obligations
05/25/82-05/24/84	FY83: \$45,000 TOTAL: \$87,500
Prin. Invest.	NASA Tech. Officer CASE Category
T'ien, T. S.	LERC/Anderson, D. N. 46-Mech Engr

**NAG 3-291 Case Western Reserve University 3967**  
Mutual coupling effects in antenna arrays

Period	Obligations
05/15/82-12/30/83	FY83: \$40,068 TOTAL: \$68,661
Prin. Invest.	NASA Tech. Officer CASE Category
Collins, R. E.	LERC/Smetana, J. 45-Elec Engr

**NAG 3-300 Case Western Reserve University 3968**  
Study of surface tension driven convection under reduced gravity

Period	Obligations
06/01/82-12/01/82	FY83: TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ostrach, S.	LERC/Sapsfield, L. P. 49-Engr, NEC
Kamotani, Y.	

**NAG 3-301 Case Western Reserve University 3969**  
Formation of SiC by carbon ion implantation in silicon

Period	Obligations
06/10/82-10/30/83	FY83: TOTAL: \$55,000
Prin. Invest.	NASA Tech. Officer CASE Category
Fung, C. D.	LERC/Powell, J. A. 33-Oceanography

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 3-324 Case Western Reserve University 3970**  
Analysis of alumina scales on nicrail alloy  
*Period* *Obligations*  
09/01/82-08/31/84 FY83: TOTAL: \$41,180  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Halloran, J. W. LERC/Smialek, J. L. 47-Materials Engr  
Cooper, A. P.

**NAG 3-331 Case Western Reserve University 3971**  
Interactive dual-bearing/shaft finite elements for integrated engine structural analysis  
*Period* *Obligations*  
10/25/82-01/31/84 FY83: \$70,168 TOTAL: \$70,168  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Adams, M. L. LERC/Chamis, C. C. 41-Aero Engr  
Fertis, D. G. LERC/Johns, R. H.

**NAG 3-337 Case Western Reserve University 3972**  
Fundamental studies of mechanistic aspects of metal fatigue in the creep range  
*Period* *Obligations*  
10/30/82-10/29/83 FY83: \$79,449 TOTAL: \$79,449  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Manson, S. S. LERC/Halford, G. R. 47-Materials Engr  
LERC/Bill, R. C.

**NAG 3-341 Case Western Reserve University 3973**  
Molecular orbital studies inoxidation, sulfate formation and metal-metal oxide adhesion  
*Period* *Obligations*  
10/30/82-10/29/83 FY83: \$57,114 TOTAL: \$57,114  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Anderson, A. B. LERC/Kohl, F. J. 12-Chemistry  
LERC/Smialek, J. L.

**NAG 3-352 Case Western Reserve University 3974**  
Degradation mechanisms of materials for large space systems in low Earth orbit  
*Period* *Obligations*  
10/06/82-07/05/84 FY83: \$69,838 TOTAL: \$69,838  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gordon, W. L. LERC/Purvis, C. K. 13-Physics  
Hoffman, R. W.

**NAG 3-369 Case Western Reserve University 3975**  
Analysis of transient behavior of rubbing components including phase transition and thermochemical effects  
*Period* *Obligations*  
12/05/82-12/04/83 FY83: \$32,688 TOTAL: \$32,688  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mullen, R. L. LERC/Hendricks, R. C. 46-Mech Engr

**NAG 3-384 Case Western Reserve University 3976**  
Study of surface-tension driven convection under reduced gravity  
*Period* *Obligations*  
12/30/82-12/29/83 FY83: \$50,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ostrach, S. LERC/Sarsfield, L. P. 49-Engr, NEC  
Kamotani, Y.

**NAG 3-387 Case Western Reserve University 3977**  
Alloying additions to ne ap and FE al for high temperature applications  
*Period* *Obligations*  
01/15/83-01/14/84 FY83: \$98,361 TOTAL: \$98,361  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Vedula, K. M. LERC/Titran, R. H. 47-Materials Engr  
Hehemann, R. F. LERC/Stephens, J. R.

**NAG 3-389 Case Western Reserve University 3978**  
Fellowship program to study sec processing techniques  
*Period* *Obligations*  
01/20/83-07/19/84 FY83: \$20,000 TOTAL: \$20,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fung, C. D. LERC/Powell, J. A. 13-Physics

**NAG 3-391 Case Western Reserve University 3979**  
General purpose rotor torsional vibration computer code  
*Period* *Obligations*  
01/31/83-01/30/84 FY83: \$34,953 TOTAL: \$34,953  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Adams, M. L. LERC/Kascak, A. F. 46-Mech Engr  
LERC/Fleming, D. P.

**NAG 3-396 Case Western Reserve University 3980**  
Fracture mechanics study of high performance aircraft engine bearings  
*Period* *Obligations*  
02/15/83-02/14/84 FY83: \$67,328 TOTAL: \$67,328  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mendelson, A. LERC/Shannon, J. L., Jr. 46-Mech Engr

**NAG 3-406 Case Western Reserve University 3981**  
Case early exposure to engineering for minority students and minority engineer industrial opportunity program  
*Period* *Obligations*  
03/25/83-03/24/84 FY83: \$10,000 TOTAL: \$10,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Boulding, E. LERC/Bailey, C. E. 49-Engr, NEC

**NAG 3-411 Case Western Reserve University 3982**  
Oscillations in thermocapillary flows  
*Period* *Obligations*  
04/01/83-03/31/84 FY83: \$35,000 TOTAL: \$35,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ostrach, S. LERC/Chai, A. 19-Phys Sci, NEC  
Kamotani, Y.

**NAG 3-417 Case Western Reserve University 3983**  
Solidification fundamentals  
*Period* *Obligations*  
03/10/83-03/09/84 FY83: \$54,510 TOTAL: \$54,510  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wallace, J. W. LERC/Gray, H. R. 47-Materials Engr



**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 3-426 Case Western Reserve University 3984**  
A study of kapton degradation under simulated shuttle environment  
*Period* 05/01/83-04/30/84 *Obligations* FY83: \$60,000 TOTAL: \$60,000  
*Prin. Invest.* Gordon, W. L. *NASA Tech. Officer* LERC/Purvis, C. K. *CASE Category* 13-Physics  
Hoffman, R. W.

**NAG 3-472 Case Western Reserve University 3991**  
Effects of gravity on stability and propagation of laminar flames  
*Period* 08/29/83-12/29/83 *Obligations* FY83: \$14,000 TOTAL: \$14,000  
*Prin. Invest.* Ostrach, S. *NASA Tech. Officer* LERC/Labus, T. L. *CASE Category* 49-Engr, NEC

**NAG 3-432 Case Western Reserve University 3985**  
Solid state detectors for CARS combustion diagnostic instrumentation  
*Period* 05/30/83-05/29/84 *Obligations* FY83: \$60,000 TOTAL: \$60,000  
*Prin. Invest.* Thompson, E. D. *NASA Tech. Officer* LERC/Decker, A. J. *CASE Category* 45-Elec Engr

**NAG 3-474 Case Western Reserve University 3992**  
Work function measurements of tungsten and type m impregnated cathodes  
*Period* 10/01/83-09/30/84 *Obligations* FY83: \$39,930 TOTAL: \$39,930  
*Prin. Invest.* Hoffman, R. W. *NASA Tech. Officer* LERC/Forman, R. *CASE Category* 19-Phys Sci, NEC

**NAG 3-440 Case Western Reserve University 3986**  
Numerical models for transonic inlet rotor stages of axial flow compressors  
*Period* 06/05/83-06/04/84 *Obligations* FY83: \$25,000 TOTAL: \$25,000  
*Prin. Invest.* Prah, J. M. *NASA Tech. Officer* LERC/Wood, J. R. *CASE Category* 41-Aero Engr  
LERC/Strazisar, A. J.

**NAG 3-480 Case Western Reserve University 3993**  
Study of surface-tension driven convection under reduced gravity conditions  
*Period* 10/15/83-10/14/84 *Obligations* FY83: \$29,995 TOTAL: \$29,995  
*Prin. Invest.* Ostrach, S. *NASA Tech. Officer* LERC/Sarsfield, L. P. *CASE Category* 49-Engr, NEC  
Kamotani, T. LERC/Chai, A. T.

**NAG 3-454 Case Western Reserve University 3987**  
A graphics interface for control system analysis  
*Period* 08/08/83-08/07/84 *Obligations* FY83: \$47,139 TOTAL: \$47,139  
*Prin. Invest.* Buchner, M. *NASA Tech. Officer* LERC/Lehtinen, B. *CASE Category* 49-Engr, NEC

**NAG 3-482 Case Western Reserve University 3994**  
Application of the method of pseudolinear equations to the Euler equations and the Navier Stokes equations  
*Period* 10/10/83-07/09/84 *Obligations* FY83: \$7,248 TOTAL: \$7,248  
*Prin. Invest.* Lavery, J. E. *NASA Tech. Officer* LERC/Stubbs, R. M. *CASE Category* 41-Aero Engr

**NAG 3-464 Case Western Reserve University 3988**  
Mechanical behavior of carbon-carbon composites  
*Period* 09/01/83-10/31/84 *Obligations* FY83: \$59,750 TOTAL: \$59,750  
*Prin. Invest.* Wallace, J. F. *NASA Tech. Officer* LERC/Levine, S. R. *CASE Category* 47-Materials Engr  
LERC/Rybicki, G. C.

**NAG 5-179 Case Western Reserve University 3995**  
Luminous, extended atmosphere stars in the Magellanic clouds  
*Period* 05/15/81-12/31/83 *Obligations* FY83: \$4,700 TOTAL: \$17,200  
*Prin. Invest.* Shore, S. N. *NASA Tech. Officer* GSFC/Kondo, Y. *CASE Category* 11-Astronomy  
Sanduleak, N. Barker, P. K.

**NAG 3-467 Case Western Reserve University 3989**  
Study of combustion liner porous metal thermal barriers  
*Period* 09/01/83-08/31/84 *Obligations* FY83: \$70,580 TOTAL: \$70,580  
*Prin. Invest.* Dybbs, A. *NASA Tech. Officer* LERC/Norgren, C. T. *CASE Category* 46-Mech Engr  
LERC/Ercegovic, D.

**NAGW 83 Case Western Reserve University 3996**  
Prenatal and postnatal development and functional differentiation of the vestibular system in normal, rotated and centrifuged rats and mice  
*Period* 07/01/80-11/30/83 *Obligations* FY83: TOTAL: \$122,845  
*Prin. Invest.* Keefe, J. R. *NASA Tech. Officer* HQ-EB/Halstead, T. W. *CASE Category* 51-Biological Sci

**NAG 3-468 Case Western Reserve University 3990**  
Stability and rheology of dispersions of silicon carbide and silicon nitride  
*Period* 09/07/83-09/06/84 *Obligations* FY83: \$79,760 TOTAL: \$79,760  
*Prin. Invest.* Halloran, J. W. *NASA Tech. Officer* LERC/Freedman, M. R. *CASE Category* 47-Materials Engr  
Foke, D. L. LERC/Herbell, T. P.

**NAGW 451 Case Western Reserve University 3997**  
Gamtrac telescope improved angular resolution for gamma ray astronomy  
*Period* 04/01/83-03/31/84 *Obligations* FY83: \$125,000 TOTAL: \$125,000  
*Prin. Invest.* Frye, G. G. *NASA Tech. Officer* HQ-EZ/Kaluzinski, L. J. *CASE Category* 11-Astronomy  
Jenkins, F. L. HQ-EZ/Opp, A. G.

# **NASA'S UNIVERSITY PROGRAM** **OHIO (Continued)**

**NAS 3-22443 Case Western Reserve University 3998**  
Center of excellence for biomedical application of ion thruster technology

Period	Obligations	
07/17/80-03/02/83	FY83: TOTAL: \$288,414	
Prin. Invest.	NASA Tech. Officer	CASE Category
Gibbons, D. F.	LERC/Weigand, A. J.	56-Medical Sciences
	LERC/Banks, B. A.	

**NAS 3-23683 Case Western Reserve University 3999**  
Photoelastic studies of hertz and crack stress fields

Period	Obligations	
10/07/82-01/15/84	FY83: \$20,780 TOTAL: \$20,780	
Prin. Invest.	NASA Tech. Officer	CASE Category
Wright, D. K., Jr.	LERC/Shannon, J. L., Jr.	49-Engr, NEC

**NASW 3404 Case Western Reserve University 4000**  
Development of a high resolution gamma ray telescope

Period	Obligations	
01/01/80-12/31/81	FY83: TOTAL: \$205,820	
Prin. Invest.	NASA Tech. Officer	CASE Category
Frye, G.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Holt, S. S.	

**NASW 3623 Case Western Reserve University 4001**  
Development of high resolution gamma ray telescope

Period	Obligations	
06/01/82-05/31/83	FY83: TOTAL: \$109,386	
Prin. Invest.	NASA Tech. Officer	CASE Category
Frye, G. M.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
Jenkins, T. L.	HQ-EZ/Opp, A. G.	

**NCC 3-8 Case Western Reserve University 4002**  
Microprocessor control of a wind turbine

Period	Obligations	
04/15/80-12/31/82	FY83: TOTAL: \$230,050	
Prin. Invest.	NASA Tech. Officer	CASE Category
Dybbs, A.	LERC/Finnegan, P. M.	49-Engr, NEC
Bradshaw, F. T.	LERC/Nyland, T. W.	

**NCC 3-18 Case Western Reserve University 4003**  
Monolithic microwave integrated circuits

Period	Obligations	
05/17/82-08/16/83	FY83: TOTAL: \$120,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kapoor, V. J.	LERC/Liu, D. C.	19-Phys Sci, NEC

**NCC 3-25 Case Western Reserve University 4004**  
Theoretical studies of the transport properties in selectivity doper III V semiconducting heterostructures

Period	Obligations	
03/07/83-03/06/84	FY83: \$35,973 TOTAL: \$35,973	
Prin. Invest.	NASA Tech. Officer	CASE Category
Segall, B.	LERC/Haugland, E.	13-Physics
	LERC/Connolly, D. J.	

**NCC 3-29 Case Western Reserve University 4005**  
Microwave and millimeter wave active and passive circuit modeling design, and testing

Period	Obligations	
07/01/83-06/30/84	FY83: \$81,109 TOTAL: \$81,109	
Prin. Invest.	NASA Tech. Officer	CASE Category
Collin, R. E.	LERC/Downey, A. N.	45-Elec Engr

**NCC 3-30 Case Western Reserve University 4006**  
Transient elastohydrodynamic lubrication in starved conjunctions

Period	Obligations	
05/15/83-11/15/83	FY83: \$8,000 TOTAL: \$8,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Prahl, J. M.	LERC/Hamrock, B. J.	46-Mech Engr
Jeng, J. R.		

**NGT 36-027-011 Case Western Reserve University 4007**  
Summer program of NASA-ASEE summer faculty fellowships

Period	Obligations	
12/16/69-03/31/84	FY83: \$551,782 TOTAL: \$2,492,625	
Prin. Invest.	NASA Tech. Officer	CASE Category
Prahl, J. M.	HQ-LB/Owens, F. C.	49-Engr, NEC

**NGT 36-027-800 Case Western Reserve University 4008**  
NASA graduate student researchers program

Period	Obligations	
05/01/83-04/30/84	FY83: \$13,000 TOTAL: \$13,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Liu, C. C.	HQ-LB/Owens, F. C.	43-Chem Engr

**NGT 36-027-801 Case Western Reserve University 4009**  
NASA graduate student researchers program

Period	Obligations	
06/01/83-05/31/84	FY83: \$12,320 TOTAL: \$12,320	
Prin. Invest.	NASA Tech. Officer	CASE Category
Taylor, P.	HQ-LB/Owens, F. C.	13-Physics

**NSG 2384 Case Western Reserve University 4010**  
Prediction of system invariants in the presence of failure

Period	Obligations	
06/01/79-06/30/83	FY83: TOTAL: \$93,746	
Prin. Invest.	NASA Tech. Officer	CASE Category
Martin, C. F.	ARC/Doolin, B. F.	49-Engr, NEC

**NSG 3040 Case Western Reserve University 4011**  
Heat transfer characteristics of porous materials

Period	Obligations	
10/01/74-06/30/83	FY83: TOTAL: \$261,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Dybbs, A.	LERC/Aukerman, C. A.	47-Materials Engr

**NSG 3197 Case Western Reserve University 4012**  
Secondary electron emission yield

Period	Obligations	
07/01/78-10/27/84	FY83: TOTAL: \$260,560	
Prin. Invest.	NASA Tech. Officer	CASE Category
Gordan, W. L.	LERC/Staskus, J. V.	13-Physics
Hoffman, R. W.	LERC/Purvis, C. K.	

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NSG 3246 Case Western Reserve University 4013**  
Anisotropy of directionally solidified nickel base superalloy monocrystals  
*Period* *Obligations*  
06/15/79-12/13/83 FY83: TOTAL: \$73,495  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ebert, L. J. LERC/Gray, H. R. 47-Materials Engr

**NSG 3251 Case Western Reserve University 4014**  
Use of the method of lines in fracture mechanics analyses with application to curved crack fronts  
*Period* *Obligations*  
03/01/79-02/28/83 FY83: TOTAL: \$172,859  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mendelson, A. LERC/Shannon, J. L., Jr. 46-Mech Engr

**NAG 3-84 Cleveland State University 4015**  
Development of optimization techniques for control of vehicle stored energy and optimization of hybrid vehicle propulsion section  
*Period* *Obligations*  
06/16/80-07/01/82 FY83: TOTAL: \$106,177  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Donoghue, J. F. LERC/Stenger, F. J. 49-Engr, NEC  
Burghart, J. H.

**NAG 3-106 Cleveland State University 4016**  
Effect of stress on ultrasonic pulses in fiber reinforced composites  
*Period* *Obligations*  
10/01/80-12/31/82 FY83: TOTAL: \$36,958  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hemann, J. H. LERC/Vary, A. 47-Materials Engr

**NAG 3-108 Cleveland State University 4017**  
High phase order induction motors  
*Period* *Obligations*  
09/29/80-07/26/83 FY83: TOTAL: \$71,332  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Klingshirn, E. A. LERC/Hatvani, B. R. 45-Elec Engr

**NAG 3-138 Cleveland State University 4018**  
NASA-Cleveland State University internship program  
*Period* *Obligations*  
12/15/80-07/14/84 FY83: \$23,310 TOTAL: \$45,574  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goradia, C. LERC/Weinberg, I. 13-Physics  
Goradia, M. G. LERC/Brandhurst, H. W.

**NAG 3-144 Cleveland State University 4019**  
Theory of high base resistivity BSF silicon solar cell  
*Period* *Obligations*  
12/22/80-09/20/82 FY83: TOTAL: \$22,477  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goradia, C. LERC/Baraona, C. R. 13-Physics  
LERC/Weinberg, I. W.

**NAG 3-155 Cleveland State University 4020**  
Expansion of Presto computer code for off-design performance calculation of steam turbine generators  
*Period* *Obligations*  
02/10/81-12/23/82 FY83: TOTAL: \$66,533  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gorla, R. S. LERC/Staiger, P. J. 46-Mech Engr  
Larson, V. H.

**NAG 3-156 Cleveland State University 4021**  
Interference between analog and digital methods of modulation of television signals  
*Period* *Obligations*  
01/09/81-10/19/84 FY83: \$66,000 TOTAL: \$250,438  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Groumpos, P. P. LERC/Whyte, W. A. 45-Elec Engr  
LERC/Miller, E. F.

**NAG 3-169 Cleveland State University 4022**  
An investigation of the electrical characteristics of a rectenna element and a rectenna array  
*Period* *Obligations*  
03/30/81-12/31/82 FY83: TOTAL: \$23,714  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Maisel, J. E. LERC/Triner, J. E. 45-Elec Engr

**NAG 3-186 Cleveland State University 4023**  
Advancement of spur gear design technology  
*Period* *Obligations*  
05/28/81-10/26/83 FY83: TOTAL: \$109,959  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Frater, J. J. LERC/Coy, J. J. 46-Mech Engr  
Kasuba, R.

**NAG 3-241 Cleveland State University 4024**  
Effect of heat treatment of electrical contacts to gallium arsenide  
*Period* *Obligations*  
12/15/81-03/13/84 FY83: \$16,416 TOTAL: \$26,351  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goradia, M. G. LERC/Flood, D. J. 45-Elec Engr  
LERC/Brinker, D. J.

**NAG 3-249 Cleveland State University 4025**  
Theory of gallium arsenide solar cells with sunlight concentration up to 100X  
*Period* *Obligations*  
01/04/82-02/02/84 FY83: \$29,761 TOTAL: \$62,055  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goradia, C. LERC/Curtis, H. B. 45-Elec Engr  
Goradia, M. LERC/Weinberg, I.

**NAG 3-254 Cleveland State University 4026**  
Study and implementation of LERC lab wide protocol for the cable television data network  
*Period* *Obligations*  
02/01/82-01/30/84 FY83: \$19,530 TOTAL: \$62,790  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Megargle, R. LERC/Schulte, R. R. 22-Computer Science  
Bockhoff, F. LERC/Pillay, S. K.

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**NAG 3-315** **Cleveland State University** **4027**  
Investigation of experimental techniques to detect, locate and quantify gear noise in helicopter transmissions  
*Period* *Obligations*  
07/31/82-12/30/83 FY83: TOTAL: \$95,995  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Flanagan, P. M. LERC/Coy, J. J. 46-Mech Engr  
Atherton, W. J.

**NAG 3-338** **Cleveland State University** **4028**  
CSU-NASA graduate internship in thermophoto voltaic  
*Period* *Obligations*  
09/22/82-12/21/83 FY83: TOTAL: \$25,006  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Piszczor Jr., M. F. LERC/Bercaw, R. W. 45-Elec Engr  
Goradia, M. LERC/Sater, B. L.

**NAG 3-339** **Cleveland State University** **4029**  
Conjugate gradient procedures for turbomachinery applications  
*Period* *Obligations*  
10/01/82-09/30/83 FY83: TOTAL: \$28,919  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Chang, S. H. LERC/Johnson, G. M. 41-Aero Engr

**NAG 3-362** **Cleveland State University** **4030**  
Electrical analog for ultrasonic material transfer function (MFT) modelling  
*Period* *Obligations*  
12/01/82-09/30/83 FY83: \$14,394 TOTAL: \$14,394  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Maisel, J. E. LERC/Vary, A. 49-Engr, NEC

**NAG 3-372** **Cleveland State University** **4031**  
A theoretical study of high current density cathode systems  
*Period* *Obligations*  
01/01/83-12/31/83 FY83: \$27,236 TOTAL: \$27,236  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schlosser, H. LERC/Wintucky, E. G. 13-Physics

**NAG 3-375** **Cleveland State University** **4032**  
A cooperative research program concerning structural dynamics of the spin rig rotor blade assy  
*Period* *Obligations*  
12/01/82-11/01/83 FY83: \$22,975 TOTAL: \$22,975  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bellini, P. X. LERC/McAleese, J. D. 46-Mech Engr

**NAG 3-386** **Cleveland State University** **4033**  
Effect of analytical interference rub models on the dynamic response of turbine engine rotors  
*Period* *Obligations*  
01/03/83-03/15/83 FY83: \$5,870 TOTAL: \$5,870  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tomko, J. J. LERC/Kascak, A. F. 46-Mech Engr  
LERC/Kiraly, L. J.

**NAG 3-441** **Cleveland State University** **4034**  
Computer simulation of solar cell welding processes  
*Period* *Obligations*  
06/15/83-12/15/83 FY83: \$19,884 TOTAL: \$19,884  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Poulos, E. LERC/Godlewski, M. P. 45-Elec Engr  
LERC/Forestieri, A. F.

**NCC 3-3** **Cleveland State University** **4035**  
Graduate study program in unsteady heat transfer in turbomachinery  
*Period* *Obligations*  
09/29/79-12/31/82 FY83: TOTAL: \$67,512  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Heiles, C. E. LERC/Wang, C. R. 46-Mech Engr  
LERC/Simoneau, R.

**NCC 3-6** **Cleveland State University** **4036**  
Power train development/analysis large scale wind turbine supporting research and technology program  
*Period* *Obligations*  
02/15/80-08/04/84 FY83: \$134,869 TOTAL: \$501,986  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kasuba, R. LERC/Linscott, B. S. 46-Mech Engr  
Penney, D. L.

**NCC 3-16** **Cleveland State University** **4037**  
Experimental and analytical investigations of characteristics of stand alone solar photovoltaic energy systems and components  
*Period* *Obligations*  
10/13/80-05/04/84 FY83: \$15,000 TOTAL: \$579,217  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Chang, G. C. LERC/Fordyce, J. S. 45-Elec Engr  
Groumpos, P. P.

**NCC 3-17** **Cleveland State University** **4038**  
Computerized mathematical model for optimizing cost and electric output of phosphoric acid fuel cells  
*Period* *Obligations*  
03/09/81-12/14/83 FY83: TOTAL: \$113,382  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Alkasab, K. A. LERC/Presler, A. F. 46-Mech Engr

**NCC 3-19** **Cleveland State University** **4039**  
Terrestrial space energetics and power systems  
*Period* *Obligations*  
09/01/82-10/14/84 FY83: \$99,974 TOTAL: \$124,974  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hambourger, P. D. LERC/Banks, B. A. 43-Chem Engr  
Shah, D. B.

**NCC 3-20** **Cleveland State University** **4040**  
Internship program in digital communications technology  
*Period* *Obligations*  
09/01/82-02/01/84 FY83: TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Groumpos, P. P. LERC/Connolly, D. J. 45-Elec Engr

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NCC 3-21 Cleveland State University 4041**  
Interaction of lubricants and lubricant additives with solid surfaces and the ambient atmosphere  
*Period* *Obligations*  
10/06/82-04/30/84 FY83: \$100,203 TOTAL: \$100,203  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gorla, R. S. LERC/Loomis, W. R. 49-Engr, NEC  
LERC/Buckley, D. H.

**NAG 3-366 John Carroll University 4049**  
Studies of optical sensor and signal processing systems  
*Period* *Obligations*  
11/08/82-11/06/84 FY83: \$88,605 TOTAL: \$88,605  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Carome, E. LERC/Baumbick, R. J. 49-Engr, NEC  
Adamousky, G. LERC/Sellers, J. F.

**NCC 3-23 Cleveland State University 4042**  
Phosphoric-acid fuel cell technology development  
*Period* *Obligations*  
11/22/82-11/21/84 FY83: \$269,000 TOTAL: \$269,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Coulman, G. LERC/Wagner, R. F. 43-Chem Engr  
Wotzak, G. P.  
Alkasab, K.

**NAG 1-341 Kent State University 4050**  
Robot environment expert system  
*Period* *Obligations*  
03/01/83-02/29/84 FY83: \$31,479 TOTAL: \$31,479  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Potter, J. L. LARC/Orlando, N. E. 22-Computer Science  
LARC/Hankins, W. W.

**NCC 3-24 Cleveland State University 4043**  
Detection and characterization of flows in ceramic materials  
*Period* *Obligations*  
02/15/83-02/14/84 FY83: \$43,575 TOTAL: \$43,575  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hemann, J. H. LERC/Klima, S. J. 47-Materials Engr

**NAG 3-298 Kent State University 4051**  
Finite elements generation using vaxima  
*Period* *Obligations*  
06/30/82-06/28/84 FY83: \$62,000 TOTAL: \$117,558  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wang, P. S. LERC/Chamis, C. C. 29-Math/Computer, NEC  
LERC/Hirschbein, M. S.

**NCC 3-27 Cleveland State University 4044**  
Mechanical behavior of thermal barrier coatings for gas turbine blades  
*Period* *Obligations*  
07/01/83-06/30/84 FY83: \$92,584 TOTAL: \$92,584  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Chang, G. C. LERC/Miller, R. A. 47-Materials Engr

**NAG 5-165 Kent State University 4052**  
Classification of terrain complexity by autocorrelation  
*Period* *Obligations*  
04/15/81-10/14/84 FY83: \$1,521 TOTAL: \$22,591  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Craig, R. G. GSFC/Labovitz, M. L. 32-Geological Sci

**NCC 3-31 Cleveland State University 4045**  
Synthetic battery cycling  
*Period* *Obligations*  
05/10/83-05/09/84 FY83: \$16,916 TOTAL: \$16,916  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ghorashi, B. LERC/Leibecki, H. F. 43-Chem Engr

**NAS 5-26111 Kent State University 4053**  
Automated techniques for mapping urban land cover with remote sensing data  
*Period* *Obligations*  
03/31/80-11/30/82 FY83: TOTAL: \$8,652  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Craig, R. GSFC/Toll, D. L. 32-Geological Sci

**NSG 3155 Cleveland State University 4046**  
Dense silicon-nitride bodies without additives  
*Period* *Obligations*  
06/30/77-09/30/82 FY83: TOTAL: \$44,850  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Yeh, H. C. LERC/Dutta, S. 43-Chem Engr

**NAGW 368 Kenyon College 4054**  
Regulation of differential growth in root gravitropism  
*Period* *Obligations*  
09/01/82-08/31/83 FY83: TOTAL: \$26,697  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Edwards, K. L. HQ-EB/Halstead, T. W. 51-Biological Sci

**NSG 3257 Cleveland State University 4047**  
A study of dynamic energy equations  
*Period* *Obligations*  
03/15/79-09/30/82 FY83: TOTAL: \$55,891  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Larson, V. H. LERC/Lorenzo, C. F. 46-Mech Engr

**NAG 9-14538 Miami University 4055**  
Research on a possible mechanism of O-G sickness  
*Period* *Obligations*  
02/15/75-04/30/84 FY83: \$35,239 TOTAL: \$264,384  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Parker, D. E. JSC/Homick, J. L. 59-Life Sci, NEC  
JSC/Reschke, M. F.

**NAG 3-313 Cuyahoga Community College 4048**  
Pre-engineering program  
*Period* *Obligations*  
09/01/82-08/31/84 FY83: \$13,195 TOTAL: \$20,650  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wieser, N. LERC/Bailey, C. E. 49-Engr, NEC

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

<b>NAS 9-16049</b>		<b>Miami University</b>	<b>4056</b>
Life science flight experiment			
<i>Period</i>	<i>Obligations</i>		
01/17/80-01/31/82	FY83:	TOTAL: \$9,384	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Parker, D. E.	JSC/Evans, J. S.	59-Life Sci, NEC	
<b>NAS 9-16051</b>		<b>Miami University</b>	<b>4057</b>
Motion perceptions evoked by osillating linear accelerator on Earth and in zero-gravity			
<i>Period</i>	<i>Obligations</i>		
01/17/80-10/01/82	FY83:	TOTAL: \$27,109	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Parker, D. E.	JSC/Evans, J. S.	59-Life Sci, NEC	
<b>NCC 1-12</b>		<b>Miami University</b>	<b>4058</b>
Basic research on radiation induced lasers			
<i>Period</i>	<i>Obligations</i>		
05/15/79-11/30/83	FY83: \$50,894	TOTAL: \$248,535	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wells, W. E.	LARC/Deyoung, R. J.	13-Physics	
	LARC/Conway, E. J.		
<b>NAG 3-79</b>		<b>Muskingum College</b>	<b>4059</b>
Chemically modified electrodes			
<i>Period</i>	<i>Obligations</i>		
06/09/80-01/08/82	FY83:	TOTAL: \$15,467	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wallace, W. J.	LERC/Charleston, L. J.	12-Chemistry	
<b>NAG 1-238</b>		<b>Ohio State University</b>	<b>4060</b>
A summary and integration of research concerning single pilot operational problems			
<i>Period</i>	<i>Obligations</i>		
01/01/82-08/31/82	FY83:	TOTAL: \$11,859	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Chapman, G. C.	LARC/Bergeron, H. P.	41-Aero Engr	
Weislogel, G. S.	LARC/Shaugnessy, J. D.		
<b>NAG 1-333</b>		<b>Ohio State University</b>	<b>4061</b>
Basic electromagnetic scattering studies			
<i>Period</i>	<i>Obligations</i>		
02/08/83-02/07/84	FY83: \$149,971	TOTAL: \$149,971	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Burnside, W. D.	LARC/Gilreath, M. C.	45-Elec Engr	
	LARC/Small, W. J.		
<b>NAG 1-342</b>		<b>Ohio State University</b>	<b>4062</b>
Role of airfoil geometry in minimizing the effect of insect contamination of laminar flow sections			
<i>Period</i>	<i>Obligations</i>		
03/01/83-02/29/84	FY83: \$34,455	TOTAL: \$34,455	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bragg, M. B.	LARC/Holmes, B. J.	41-Aero Engr	
<b>NAG 2-34</b>		<b>Ohio State University</b>	<b>4063</b>
Zero modules and inverse system design			
<i>Period</i>	<i>Obligations</i>		
04/01/80-10/31/83	FY83:	TOTAL: \$46,874	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wyman, B.	ARC/Meyer, G.	49-Engr, NEC	
<b>NAG 2-112</b>		<b>Ohio State University</b>	<b>4064</b>
Use of computer aided testing in the investigation of pilot response to critical in flight events			
<i>Period</i>	<i>Obligations</i>		
04/01/81-11/30/83	FY83: \$65,000	TOTAL: \$206,496	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Rockwell, T. H.	ARC/Lauber, J. K.	69-Psych, NEC	
Giffin, W. C.			
<b>NAG 2-163</b>		<b>Ohio State University</b>	<b>4065</b>
Unitary group methods in quatum chemistry			
<i>Period</i>	<i>Obligations</i>		
03/01/82-03/31/83	FY83:	TOTAL: \$7,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Shavitt, I.	ARC/Langhoff, S. R.	12-Chemistry	
<b>NAG 2-184</b>		<b>Ohio State University</b>	<b>4066</b>
Pilot performance and workload assessment: An analysis of pilot errors			
<i>Period</i>	<i>Obligations</i>		
07/01/82-02/28/83	FY83:	TOTAL: \$10,744	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Jensen, R. S.	ARC/Hart, S. G.	99-Multi-Discip	
<b>NAG 2-195</b>		<b>Ohio State University</b>	<b>4067</b>
Discrete control modelling of computer-aided control of strongly interactive systems			
<i>Period</i>	<i>Obligations</i>		
08/01/80-06/30/84	FY83: \$85,214	TOTAL: \$166,486	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Miller, R. A.	ARC/Hartzell, E. J.	69-Psych, NEC	
Jagacinski, R. J.			
<b>NAG 3-28</b>		<b>Ohio State University</b>	<b>4068</b>
Effects of ice formation on 2D aerodynamic shapes			
<i>Period</i>	<i>Obligations</i>		
02/01/80-06/03/84	FY83: \$119,936	TOTAL: \$343,424	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gregorek, G. M.	LERC/Shaw, R. J.	41-Aero Engr	
Bragg, M. B.			
<b>NAG 3-36</b>		<b>Ohio State University</b>	<b>4069</b>
Vibration analysis of turbine engine blades			
<i>Period</i>	<i>Obligations</i>		
05/01/80-10/31/83	FY83:	TOTAL: \$160,335	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Leissa, A. W.	LERC/Brown, G. V.	46-Mech Engr	
<b>NAG 3-109</b>		<b>Ohio State University</b>	<b>4070</b>
Propeller/rotor icing study			
<i>Period</i>	<i>Obligations</i>		
10/06/80-11/01/83	FY83: \$64,845	TOTAL: \$154,935	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lee, J. D.	LERC/Shaw, R. J.	41-Aero Engr	

# NASA'S UNIVERSITY PROGRAM

## OHIO (Continued)

<b>NAG 3-159</b>			
<b>Ohio State University</b>		<b>4071</b>	
Engineering calculations for communications satellite systems planning			
<i>Period</i>	<i>Obligations</i>		
01/20/81-07/13/84	FY83: TOTAL: \$279,946		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Levis, C. A.	LERC/Miller, E. F.	45-Elec Engr	
Martin, C. H.	LERC/Whyte, W. A.		
<b>NAG 3-330</b>			
<b>Ohio State University</b>		<b>4072</b>	
Tailored airfoils for wind turbine applications			
<i>Period</i>	<i>Obligations</i>		
09/15/82-10/31/83	FY83: TOTAL: \$99,902		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gregorek, G. M.	LERC/Saviro, J. M.	42-Astro Engr	
Lee, J. D.			
<b>NAG 3-340</b>			
<b>Ohio State University</b>		<b>4073</b>	
Fundamentals of microcrack nucleation mechanics			
<i>Period</i>	<i>Obligations</i>		
10/30/82-04/29/84	FY83: \$54,925 TOTAL: \$54,925		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Fu, L. S.	LERC/Vary, A.	47-Materials Engr	
<b>NAG 3-374</b>			
<b>Ohio State University</b>		<b>4074</b>	
Documentation office shapes for the helicopter icing flight test program			
<i>Period</i>	<i>Obligations</i>		
11/29/82-10/28/83	FY83: \$129,984 TOTAL: \$129,984		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lee, J. D.	LERC/Shaw, R. J.	41-Aero Engr	
	LERC/Richter, G. P.		
<b>NAG 3-424</b>			
<b>Ohio State University</b>		<b>4075</b>	
Study of internal distributed damping for vibrating turbomachinery blades			
<i>Period</i>	<i>Obligations</i>		
04/15/83-04/14/84	FY83: \$59,948 TOTAL: \$59,948		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Leissa, A. W.	LERC/Brown, G. V.	41-Aero Engr	
<b>NAG 3-448</b>			
<b>Ohio State University</b>		<b>4076</b>	
Feasibility study on diffusion bonding in GaAs solar cell fabrication			
<i>Period</i>	<i>Obligations</i>		
06/27/83-12/31/83	FY83: \$8,208 TOTAL: \$8,208		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Albright, C. E.	LERC/Bozek, J.	47-Materials Engr	
Gangl, K. J.	LERC/Forestieri, A.		
<b>NAG 3-476</b>			
<b>Ohio State University</b>		<b>4077</b>	
Analysis of electromagnetic scattering			
<i>Period</i>	<i>Obligations</i>		
09/25/83-03/25/84	FY83: \$27,048 TOTAL: \$27,048		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Pathak, P. H.	LERC/Cho, Y. C.	45-Elec Engr	
<b>NAG 5-52</b>			
<b>Ohio State University</b>		<b>4078</b>	
Ultraviolet studies of later type beryllium stars			
<i>Period</i>	<i>Obligations</i>		
05/15/80-02/29/84	FY83: \$5,000 TOTAL: \$15,865		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Slettebak, A.	GSFC/Kondo, Y.	11-Astronomy	
<b>NAG 5-266</b>			
<b>Ohio State University</b>		<b>4079</b>	
Measurements of chromospheric densities and geometrical extensions of Sato types giant and super-giant stars			
<i>Period</i>	<i>Obligations</i>		
09/01/82-08/31/83	FY83: TOTAL: \$5,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Linsky, J. L.	GSFC/Kondo, Y.	11-Astronomy	
Wing, R. F.			
<b>NAGW 297</b>			
<b>Ohio State University</b>		<b>4080</b>	
The role of acid and calcium gradients in gravitropism			
<i>Period</i>	<i>Obligations</i>		
03/01/82-03/31/84	FY83: \$45,336 TOTAL: \$86,878		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Vans, M. E.	HQ-EB/Halstead, T. W.	51-Biological Sci	
<b>NAS 1-15680</b>			
<b>Ohio State University</b>		<b>4081</b>	
Flight evaluation of the aeroacoustics of general aviation propellers			
<i>Period</i>	<i>Obligations</i>		
01/04/79-02/15/84	FY83: \$18,246 TOTAL: \$223,682		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gregorek, G. M.	LARC/Greene, G. C.	41-Aero Engr	
Korkan, K. D.	LARC/Raney, J. P.		
Weislogel, G. S.			
<b>NAS 1-15969</b>			
<b>Ohio State University</b>		<b>4082</b>	
Determine the IFR operation profile of the general aviation single pilot			
<i>Period</i>	<i>Obligations</i>		
09/12/79-02/28/82	FY83: TOTAL: \$67,816		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Weislogel, G. S.	LARC/Bergeron, H. P.	41-Aero Engr	
<b>NAS 1-16388</b>			
<b>Ohio State University</b>		<b>4083</b>	
Bellanca skyrocket natural laminar flow flight research			
<i>Period</i>	<i>Obligations</i>		
08/20/80-09/15/82	FY83: \$1,434 TOTAL: \$167,883		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gregorek, G. M.	LARC/Holmes, B. J.	41-Aero Engr	
<b>NAS 1-17450</b>			
<b>Ohio State University</b>		<b>4084</b>	
Analysis of large aperture reflector antennas			
<i>Period</i>	<i>Obligations</i>		
07/18/83-10/02/85	FY83: \$65,000 TOTAL: \$65,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Rudduck, C.	LARC/Beck, F. B.	45-Elec Engr	
	LARC/Bailey, M. C.		

# **NASA'S UNIVERSITY PROGRAM** **OHIO (Continued)**

**NAS 5-25888** **Ohio State University** **4085**  
Utilization of range-difference observation in geodynamics  
*Period* *Obligations*  
09/19/79-12/18/82 **FY83:** **TOTAL: \$120,000**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mueller, I. I. GSFC/Stephanides, C. C. 32-Geological Sci

**NGR 36-008-161** **Ohio State University** **4092**  
The direct combination of satellite and gravity data  
*Period* *Obligations*  
05/01/71-05/31/84 **FY83: \$45,618** **TOTAL: \$410,258**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rapp, R. H. GSFC/Welker, J. 32-Geological Sci

**NASW 3601** **Ohio State University** **4086**  
A theoretical study of the surface tension of liquid metal systems  
*Period* *Obligations*  
03/01/82-02/28/84 **FY83:** **TOTAL: \$69,762**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stroud, D. G. HQ-EM/Dressler, R. F. 12-Chemistry

**NSG 1498** **Ohio State University** **4093**  
Analysis of airborne antenna patterns  
*Period* *Obligations*  
01/16/78-06/30/84 **FY83: \$99,979** **TOTAL: \$349,454**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Burnside, W. D. LARC/Beck, F. B. 45-Elec Engr  
LARC/Cockrell, C. R.

**NCA 2-565001** **Ohio State University** **4087**  
An introductory study of the H-force rotor  
*Period* *Obligations*  
11/01/79-06/30/82 **FY83:** **TOTAL: \$33,569**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Velkoff, H. R. ARC/Stroub, R. H. 41-Aero Engr

**NSG 1613** **Ohio State University** **4094**  
Radar cross section studies  
*Period* *Obligations*  
05/01/79-04/30/84 **FY83: \$324,856** **TOTAL: \$676,471**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Peters, L., Jr. LARC/Gilreath, M. C. 45-Elec Engr  
Burnside, W. D.

**NCA 2-565101** **Ohio State University** **4088**  
Investigation of truncation error associated with transonic full potential equation and optimum redistribution of grid points  
*Period* *Obligations*  
07/01/81-09/30/83 **FY83: \$30,000** **TOTAL: \$55,000**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nakamura, S. ARC/Holst, T. L. 41-Aero Engr

**NSG 2162** **Ohio State University** **4095**  
Electronic search technology applicable to the search for extraterrestrial intelligence problem  
*Period* *Obligations*  
06/01/76-11/30/83 **FY83: \$20,000** **TOTAL: \$80,181**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kraus, J. D. ARC/Wolfe, J. H. 45-Elec Engr  
Dixon, R. S. ARC/Billingham, J.

**NCA 2-565102** **Ohio State University** **4089**  
Experimental investigation of flow fields of rotors in hover with modified tips  
*Period* *Obligations*  
07/01/81-06/30/82 **FY83:** **TOTAL: \$19,995**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Velkoff, H. R. ARC/Stroub, R. H. 41-Aero Engr

**NSG 2175** **Ohio State University** **4096**  
Laboratory infrared research relevant to atmospheric and planetary studies  
*Period* *Obligations*  
10/01/76-09/30/82 **FY83:** **TOTAL: \$156,238**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rao, K. N. ARC/Boese, R. W. 13-Physics

**NCC 2-206** **Ohio State University** **4090**  
The effects of fatigue on cockpit communication and resource management  
*Period* *Obligations*  
08/01/82-11/30/83 **FY83: \$89,850** **TOTAL: \$118,457**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jensen, R. ARC/Foushee, H. C. 62-Social Aspects  
Lerch, A. ARC/Lauber, J. K.  
Rings, G.

**NSG 2179** **Ohio State University** **4097**  
Study of factual sensing and transmittal of information  
*Period* *Obligations*  
09/01/76-09/30/82 **FY83:** **TOTAL: \$218,006**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jagacinski, R. J. ARC/Dunn, R. S. 69-Psych, NEC  
Gilson, R. D.

**NCC 2-240** **Ohio State University** **4091**  
Evaluation of airfoil profiles  
*Period* *Obligations*  
04/01/83-07/31/83 **FY83: \$21,800** **TOTAL: \$21,800**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lee, J. D. ARC/Corsiglia, V. R. 41-Aero Engr

**NSG 2220** **Ohio State University** **4098**  
Environmental and genetic effects on gravity receptors: A morphological, physiological and behavioral study  
*Period* *Obligations*  
05/01/77-09/30/83 **FY83:** **TOTAL: \$202,308**  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lim, D. J. ARC/Mehler, W. R. 51-Biological Sci



**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NSG 3164** **Ohio State University** **4099**  
Deformation structures in metal crystals due to wear and machining at high speed  
*Period* *Obligations*  
12/01/77-12/30/81 FY83: TOTAL: \$97,406  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Black, J. T. LERC/Bill, R. C. 47-Materials Engr  
LERC/Ludwig, L. P.

**NSG 3235** **Ohio State University** **4100**  
Mechanism of fiber release during pyrolysis of carbon fiber reinforced plastics  
*Period* *Obligations*  
12/01/78-11/30/81 FY83: TOTAL: \$71,933  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Smith, E. E. LERC/Bowles, K. J. 49-Engr, NEC  
LERC/Serafini, T. T.

**NSG 3247** **Ohio State University** **4101**  
Propeller aero-acoustic methodology  
*Period* *Obligations*  
01/15/79-09/29/82 FY83: TOTAL: \$276,397  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gregorek, G. M. LERC/Mitchell, G. A. 41-Aero Engr  
Korkan, K. D.

**NSG 3269** **Ohio State University** **4102**  
In search of the Theoretical foundation for quantitative ultrasonic measurement of fracture toughness  
*Period* *Obligations*  
05/01/79-10/05/82 FY83: TOTAL: \$87,887  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fu, L. S. LERC/Vary, A. 47-Materials Engr

**NSG 3302** **Ohio State University** **4103**  
The application of optical computing techniques to jet engine controls  
*Period* *Obligations*  
08/01/79-07/28/84 FY83: \$129,997 TOTAL: \$409,897  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Collins, S. A., Jr. LERC/Baumbick, R. J. 21-Mathematics  
LERC/Sellers, J. F.

**NSG 5265** **Ohio State University** **4104**  
Basic research for the Earth dynamics program  
*Period* *Obligations*  
04/01/78-06/30/84 FY83: \$37,000 TOTAL: \$381,217  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mueller, I. I. GSFC/Welker, J. 32-Geological Sci  
Uotila, U. A. GSFC/Smith, D. E.

**NSG 5368** **Ohio State University** **4105**  
Research of binary systems and composite sources involving cool and hot components  
*Period* *Obligations*  
06/01/79-11/30/83 FY83: \$7,000 TOTAL: \$39,240  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wing, R. F. GSFC/Kondo, Y. 11-Astronomy  
Stencel, R. E.

**NSG 7479** **Ohio State University** **4106**  
Investigation of infrared spectra of atmospheric gases to support stratospheric spectroscopic observations  
*Period* *Obligations*  
11/01/78-10/31/83 FY83: \$68,811 TOTAL: \$287,840  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shaw, J. H. HQ-EE/Hilsenrath, E. 31-Atmos Sci  
HQ-EB/Watson, R. T.

**NAG 1-124** **Ohio University** **4107**  
An investigation of methods for efficient transfer of weather information to the pilot  
*Period* *Obligations*  
12/01/80-11/30/82 FY83: TOTAL: \$59,940  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McFarland, R. H. LARC/Adams, J. J. 41-Aero Engr  
Lilley, R. W.

**NAG 2-231** **Ohio University** **4108**  
Performance comparison of three concepts of differential GPS in the civil helicopter environment  
*Period* *Obligations*  
05/01/83-10/31/83 FY83: \$50,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McFarland, R. H. ARC/Edwards, F. G. 41-Aero Engr  
Lilley, R. W. ARC/Bull, J. S.  
McCall, D. L.

**NAS 1-17368** **Ohio University** **4109**  
Implementation of realistic ILS course structures for simulation  
*Period* *Obligations*  
05/13/83-01/27/84 FY83: \$19,992 TOTAL: \$19,992  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McFarland, R. H. LARC/Adams, J. J. 41-Aero Engr

**NGR 36-009-017** **Ohio University** **4110**  
Air transportation systems: Emphasis on low frequency navigation  
*Period* *Obligations*  
02/26/71-11/30/85 FY83: \$42,341 TOTAL: \$858,396  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McFarland, R. H. LARC/Howell, W. E. 45-Elec Engr  
LARC/Bryant, W. H.

**NAG 3-50** **University of Akron** **4111**  
NASA LERC/Akron University graduate cooperative fellowship programs  
*Period* *Obligations*  
06/01/80-05/28/84 FY83: \$55,000 TOTAL: \$175,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fertis, D. G. LERC/Chamis, C. C. 41-Aero Engr  
Chang, T. P. LERC/Johns, R. H.  
Simon, A.

**NAG 3-54** **University of Akron** **4112**  
Self adaptive solutions strategies  
*Period* *Obligations*  
08/01/80-01/29/84 FY83: \$36,150 TOTAL: \$116,150  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Padovan, J. LERC/Chamis, C. C. 46-Mech Engr  
LERC/Hirschbein, M. S.

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

<b>NAG 3-55</b>	<b>University of Akron</b>	<b>4113</b>	Life science experiment	
Helicopter transmission reliability model				
<i>Period</i>	<i>Obligations</i>			
08/01/80-12/28/84	FY83: \$85,000	TOTAL: \$192,630	01/17/80-01/31/82	FY83: TOTAL: \$13,262
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Savage, M.	LERC/Coy, J. J.	46-Mech Engr	Herron, D. E.	JSC/French, B. O.
				CASE Category
				59-Life Sci, NEC

<b>NAG 3-265</b>	<b>University of Akron</b>	<b>4114</b>	The indentification of a practicable legal regime for the carriage of goods and persons to, from and within outer space	
Analysis of thermo-mechanical response of thick thermal protective coating systems				
<i>Period</i>	<i>Obligations</i>			
03/05/82-10/30/83	FY83: \$40,000	TOTAL: \$94,786	10/01/80-09/30/83	FY83: TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Padovan, J.	LERC/Hendricks, R. C.	46-Mech Engr	Desaussure, H.	ARC/Glazer, J. H.
Chung, B. T.			Rizza, J. R.	ARC/Pittman, R. B.
Braun, M. J.				

<b>NAG 3-304</b>	<b>University of Akron</b>	<b>4115</b>	Optimization structural analysis and dynamics	
Effects of journal orbital vibration on the time dependent pressure-flow characteristics of a hydrostatic journal bearing				
<i>Period</i>	<i>Obligations</i>			
09/01/82-10/31/83	FY83:	TOTAL: \$57,108	09/01/80-08/31/83	FY83: TOTAL: \$37,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Braun, M. J.	LERC/Hannum, N. P.	49-Engr, NEC	Fertis, D. G.	HQ-LB/Carter, C. H.
Adams, M. L.				

<b>NAG 3-307</b>	<b>University of Akron</b>	<b>4116</b>	Training grant for algorithms for nonlinear problems	
Nonlinear finite element analysis of shells with large aspect ratios				
<i>Period</i>	<i>Obligations</i>			
06/30/82-10/30/83	FY83:	TOTAL: \$52,428	09/01/80-08/31/83	FY83: TOTAL: \$37,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Chang, T. Y.	LERC/Chamis, C. C.	41-Aero Engr	Chang, T. Y.	HQ-LB/Carter, C. H.
	LERC/Johns, R. H.			

<b>NAG 3-318</b>	<b>University of Akron</b>	<b>4117</b>	Graduate student researchers program	
Investigation of liquid propellant reorientation induced mixing and thermal behavior in a low-gravity environment				
<i>Period</i>	<i>Obligations</i>			
10/01/82-10/30/83	FY83:	TOTAL: \$39,600	06/01/82-05/31/84	FY83: \$15,000 TOTAL: \$27,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Hochstein, J. I.	LERC/Aydelott, J. C.	46-Mech Engr	Savinelli, R. F.	HQ-LB/Owens, F. C.
Gerhart, P. M.	LERC/Smolak, G. R.			

<b>NAG 3-379</b>	<b>University of Akron</b>	<b>4118</b>	Graduate student researchers program	
Multiaxial structural behavior of high temperature materials				
<i>Period</i>	<i>Obligations</i>			
12/15/82-09/30/84	FY83: \$233,163	TOTAL: \$233,163	06/01/82-05/31/84	FY83: \$15,000 TOTAL: \$26,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Robinson, D. N.	LERC/Berke, L.	41-Aero Engr	Savinelli, R. F.	HQ-LB/Owens, F. C.
Simon, A. L.				

<b>NAG 3-416</b>	<b>University of Akron</b>	<b>4119</b>	Finite elements for rotor/stator interactive forces in general engine dynamic simulator	
Computation of flow around airfoils with ice accretion using a 2-D Navier-Stokes computer code				
<i>Period</i>	<i>Obligations</i>			
04/01/83-03/31/84	FY83: \$44,615	TOTAL: \$44,615	08/31/79-12/30/82	FY83: TOTAL: \$216,950
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Potapczuk, M. G.	LERC/Shaw, R. J.	41-Aero Engr	Adams, M. L.	LERC/Chamis, C. C.
Gerhart, P. M.			Fertis, D. G.	LERC/Hirschbein, M. S.

<b>NAS 9-16043</b>	<b>University of Akron</b>	<b>4120</b>		
Life science experiment				
<i>Period</i>	<i>Obligations</i>			
01/17/80-01/31/82	FY83:	TOTAL: \$13,262		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Herron, D. E.	JSC/French, B. O.	59-Life Sci, NEC		

<b>NCA 2-5101</b>	<b>University of Akron</b>	<b>4121</b>		
The indentification of a practicable legal regime for the carriage of goods and persons to, from and within outer space				
<i>Period</i>	<i>Obligations</i>			
10/01/80-09/30/83	FY83:	TOTAL: \$30,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Desaussure, H.	ARC/Glazer, J. H.	99-Multi-Discip		
Rizza, J. R.	ARC/Pittman, R. B.			

<b>NGT 36-001-800</b>	<b>University of Akron</b>	<b>4122</b>		
Optimization structural analysis and dynamics				
<i>Period</i>	<i>Obligations</i>			
09/01/80-08/31/83	FY83:	TOTAL: \$37,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Fertis, D. G.	HQ-LB/Carter, C. H.	44-Civil Engr		

<b>NGT 36-001-801</b>	<b>University of Akron</b>	<b>4123</b>		
Training grant for algorithms for nonlinear problems				
<i>Period</i>	<i>Obligations</i>			
09/01/80-08/31/83	FY83:	TOTAL: \$37,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Chang, T. Y.	HQ-LB/Carter, C. H.	44-Civil Engr		

<b>NGT 36-001-802</b>	<b>University of Akron</b>	<b>4124</b>		
Graduate student researchers program				
<i>Period</i>	<i>Obligations</i>			
06/01/82-05/31/84	FY83: \$15,000	TOTAL: \$27,500		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Savinelli, R. F.	HQ-LB/Owens, F. C.	43-Chem Engr		

<b>NGT 36-001-803</b>	<b>University of Akron</b>	<b>4125</b>		
Graduate student researchers program				
<i>Period</i>	<i>Obligations</i>			
06/01/82-05/31/84	FY83: \$15,000	TOTAL: \$26,800		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Savinelli, R. F.	HQ-LB/Owens, F. C.	43-Chem Engr		

<b>NSG 3283</b>	<b>University of Akron</b>	<b>4126</b>		
Finite elements for rotor/stator interactive forces in general engine dynamic simulator				
<i>Period</i>	<i>Obligations</i>			
08/31/79-12/30/82	FY83:	TOTAL: \$216,950		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Adams, M. L.	LERC/Chamis, C. C.	41-Aero Engr		
Fertis, D. G.	LERC/Hirschbein, M. S.			

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 1-8** **University of Cincinnati** **4127**  
Spline collocation for viscous flow over-after body configurations

Period	Obligations
11/01/79-04/30/84	FY83: \$42,895 TOTAL: \$155,230
Prin. Invest.	NASA Tech. Officer CASE Category
Rubin, S. G.	LARC/Swanson, R. C. 41-Aero Engr
	LARC/Putnam, L. E.

**NAG 1-204** **University of Cincinnati** **4128**  
Silicon superlattices II: Silicon-germanium (Si-Ge) heterostructures and systems

Period	Obligations
09/01/81-04/30/83	FY83: TOTAL: \$45,721
Prin. Invest.	NASA Tech. Officer CASE Category
Moriarty, J. A.	LARC/Stermer, R. L. 45-Elec Engr
	LARC/Hayes, P. J.

**NAG 2-38** **University of Cincinnati** **4129**  
Flap-lag-torsional dynamics of extensional and intensional rotor blades in hover and in forward flight

Period	Obligations
07/01/80-12/31/82	FY83: TOTAL: \$63,158
Prin. Invest.	NASA Tech. Officer CASE Category
Crespo Da Silva, M.R.	ARC/Hodges, D. H. 41-Aero Engr

**NAG 2-175** **University of Cincinnati** **4130**  
Study of optimal 3-D and 4-D trajectories for helicopters

Period	Obligations
06/01/82-10/31/83	FY83: TOTAL: \$32,916
Prin. Invest.	NASA Tech. Officer CASE Category
Slater, G. L.	ARC/Erzberger, H. 41-Aero Engr

**NAG 3-26** **University of Cincinnati** **4131**  
Experimental study of radial turbine scrolls

Period	Obligations
03/01/80-02/25/84	FY83: TOTAL: \$111,230
Prin. Invest.	NASA Tech. Officer CASE Category
Tabakoff, W.	LERC/McLallin, K. L. 41-Aero Engr

**NAG 3-128** **University of Cincinnati** **4132**  
Therman and structural properties of molecular beam deposited diamond

Period	Obligations
11/17/80-11/14/83	FY83: TOTAL: \$10,700
Prin. Invest.	NASA Tech. Officer CASE Category
Jackson, H.	LERC/Kolecki, J. 13-Physics

**NAG 3-193** **University of Cincinnati** **4133**  
Investigation of experimental techniques to detect, locate and quantify gear noise in helicopter transmissions

Period	Obligations
09/01/81-08/31/82	FY83: TOTAL: \$49,974
Prin. Invest.	NASA Tech. Officer CASE Category
Flanagan, P. M.	LERC/Coy, J. J. 46-Mech Engr
Morse, I. E.	

**NAG 3-194** **University of Cincinnati** **4134**  
Study of internal viscous flows

Period	Obligations
07/15/81-02/29/84	FY83: TOTAL: \$134,988
Prin. Invest.	NASA Tech. Officer CASE Category
Ghia, K. N.	LERC/Katsanis, T. 41-Aero Engr
Ghia, U.	

**NAG 3-297** **University of Cincinnati** **4135**  
Development of injection devices based upon GaAs

Period	Obligations
06/30/82-12/30/83	FY83: TOTAL: \$64,067
Prin. Invest.	NASA Tech. Officer CASE Category
Henderson, H. T.	LERC/Sundberg, G. R. 45-Elec Engr
Kosel, P. B.	

**NAG 3-397** **University of Cincinnati** **4136**  
Global relaxation with the PNS equations for internal flows

Period	Obligations
03/01/83-02/28/84	FY83: \$14,144 TOTAL: \$14,144
Prin. Invest.	NASA Tech. Officer CASE Category
Rubin, S. G.	LERC/Adamczyk, J. J. 41-Aero Engr

**NAG 3-455** **University of Cincinnati** **4137**  
Etching of thin layers for homojunction GaAs photovoltaic cells

Period	Obligations
10/01/83-03/31/84	FY83: \$25,395 TOTAL: \$25,395
Prin. Invest.	NASA Tech. Officer CASE Category
Mantel, T. D.	LERC/Flood, D. J. 45-Elec Engr

**NAS 8-34503** **University of Cincinnati** **4138**  
Investigation of improved modal parameter estimation procedure

Period	Obligations
08/04/81-11/01/83	FY83: \$8,826 TOTAL: \$30,125
Prin. Invest.	NASA Tech. Officer CASE Category
Brown, D. L.	MSFC/Johnston, G. D. 41-Aero Engr
	MSFC/Coleman, A. D.

**NCA 2-130101** **University of Cincinnati** **4139**  
Improvement of parabolized Navier-Stokes solvers for subsonic, transonic, and supersonic flows

Period	Obligations
06/01/81-11/30/82	FY83: TOTAL: \$27,300
Prin. Invest.	NASA Tech. Officer CASE Category
Davis, R. T.	ARC/Rakich, J. V. 41-Aero Engr

**NCC 3-33** **University of Cincinnati** **4140**  
III-V compound semiconductor technology

Period	Obligations
07/28/83-07/27/84	FY83: \$184,978 TOTAL: \$184,978
Prin. Invest.	NASA Tech. Officer CASE Category
Kapoor, V. J.	LERC/Liu, D. C. 19-Phys Sci, NEC
Henderson, H. T.	

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NGT 36-004-800**      **University of Cincinnati**      **4141**  
Graduate student training program in computational fluid dynamics  
*Period*      *Obligations*  
07/01/80-09/30/84      FY83: \$104,998      TOTAL: \$379,998  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Rubin, S. G.      HQ-RT/Graves, R. A., Jr.      41-Aero Engr

**NSG 1185**      **University of Cincinnati**      **4142**  
Geometric modeling and analysis of rod-like large space structures  
*Period*      *Obligations*  
05/01/75-10/31/84      FY83: \$25,000      TOTAL: \$237,881  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Nayfeh, A. H.      LARC/Mikulas, M. M., Jr.      49-Engr, NEC

**NSG 3022**      **University of Cincinnati**      **4143**  
Investigation of a new family of semiconductor diodes based upon bulk effects of deep impurities  
*Period*      *Obligations*  
07/01/74-05/03/85      FY83:      TOTAL: \$459,619  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Henderson, H. T.      LERC/Sundberg, G. R.      45-Elec Engr

**NSG 3024**      **University of Cincinnati**      **4144**  
Research into the use of silane pyrolytic deposition methods for SiO<sub>2</sub> growth in the construction of stable high energy density capacitors  
*Period*      *Obligations*  
07/01/74-03/31/83      FY83:      TOTAL: \$135,266  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Schetz, J. A.      LERC/Renz, D.      45-Elec Engr

**NSG 3188**      **University of Cincinnati**      **4145**  
Investigations into the geometry of straight and spiral bevel gears  
*Period*      *Obligations*  
04/01/78-05/26/84      FY83:      TOTAL: \$175,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Huston, R. L.      LERC/Coy, J. J.      46-Mech Engr

**NSG 3218**      **University of Cincinnati**      **4146**  
Study of environmental solid particle effects on axial flow compressor  
*Period*      *Obligations*  
11/15/78-06/30/82      FY83:      TOTAL: \$59,667  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Tabakoff, W.      LERC/Stubbs, R. M.      46-Mech Engr

**NSG 3263**      **University of Cincinnati**      **4147**  
A mechanistic evaluation of deformation and fracture in high temperature low cycle fatigue  
*Period*      *Obligations*  
03/26/79-06/25/82      FY83:      TOTAL: \$93,864  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Antolovich, S. D.      LERC/Hirschberg, M. H.      LERC/Oldrieve, R. E.      47-Materials Engr

**DEN 3-286**      **University of Dayton**      **4148**  
Fatigue testing of wood composite wind turbine blade materials  
*Period*      *Obligations*  
03/24/82-12/07/83      FY83:      TOTAL: \$74,500  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Emery, S. A.      LERC/Lark, R. L.      47-Materials Engr

**NAG 1-310**      **University of Dayton**      **4149**  
Documentation and evaluation of water flow wing holography  
*Period*      *Obligations*  
01/07/83-08/06/83      FY83: \$29,424      TOTAL: \$29,424  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Harris, J. S.      LARC/Weinstein, L. M.      41-Aero Engr  
Harding, K. G.      LARC/Burner, A. W.  
Loomis, J. S.

**NAG 3-65**      **University of Dayton**      **4150**  
Development of an airfoil ice accretion model  
*Period*      *Obligations*  
04/28/80-10/25/83      FY83:      TOTAL: \$142,518  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Luers, J. K.      LERC/Shaw, R. J.      41-Aero Engr

**NAG 3-246**      **University of Dayton**      **4151**  
Crack initiation and growth at stress concentration sites  
*Period*      *Obligations*  
01/02/82-12/31/83      FY83: \$54,993      TOTAL: \$109,440  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Gallagher, J. P.      LERC/Orange, T. W.      47-Materials Engr  
LERC/Shannon, J. L., Jr.

**NAS 1-17522**      **University of Dayton**      **4152**  
Develop, fabricate, deliver and install an oven heated copper vapor laser  
*Period*      *Obligations*  
09/14/83-04/02/84      FY83: \$39,958      TOTAL: \$39,958  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Grokay, M. C.      LARC/Weinstein, L. M.      41-Aero Engr  
Harris, J. S.      LARC/Burner, A. W.  
Huff, L.

**NAS 2-11184**      **University of Dayton**      **4153**  
Development of a survivability model for aircraft accidents involving fire  
*Period*      *Obligations*  
02/16/82-09/30/83      FY83: \$38,433      TOTAL: \$113,566  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Engler, N. A.      ARC/Cagliostro, D. E.      ARC/Parker, J. A.      29-Math/Computer, NEC

**NAS 6-3086**      **University of Dayton**      **4154**  
Service, materials and personnel necessary to provide correlative data efforts for WFC field measurements office  
*Period*      *Obligations*  
03/01/80-10/31/83      FY83: \$59,976      TOTAL: \$242,121  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Luers, J. K.      GSFC/Schmidlin, F. J.      31-Atmos Sci  
Keller, J.  
Jenks, F.

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAS 8-34544** **University of Dayton** **4155**  
Intermescent coding development  
Period Obligations  
07/17/81-07/16/82 FY83: TOTAL: \$52,544  
Prin. Invest. NASA Tech. Officer CASE Category  
Salyer, I. O. MSFC/Harwell, R. J. 12-Chemistry  
MSFC/Stuckey, J. M.

**NAS 8-34682** **University of Dayton** **4156**  
Turbine blade damping study  
Period Obligations  
12/03/81-02/01/84 FY83: \$165,591 TOTAL: \$314,840  
Prin. Invest. NASA Tech. Officer CASE Category  
Drake, M. L. MSFC/Kiefling, L. 46-Mech Engr  
MSFC/Schutzenhofer, L.

**NAS 8-34687** **University of Dayton** **4157**  
Prediction of atmospheric turbulence using an index to the DRT  
Period Obligations  
07/02/82-12/31/83 FY83: \$32,996 TOTAL: \$92,828  
Prin. Invest. NASA Tech. Officer CASE Category  
Luers, J. K. MSFC/Camp, D. W. 31-Atmos Sci  
MSFC/Alexander, M. B.

**NAG 3-42** **University of Toledo** **4158**  
Digital television simulation facility  
Period Obligations  
03/31/80-12/14/83 FY83: \$49,874 TOTAL: \$142,487  
Prin. Invest. NASA Tech. Officer CASE Category  
Kwatra, S. C. LERC/Whyte, W. A. 45-Elec Engr

**NAG 3-72** **University of Toledo** **4159**  
Numerical simulation of heat transfer phenomena occurring during deicing of aircraft components  
Period Obligations  
06/01/80-10/30/83 FY83: \$30,000 TOTAL: \$113,000  
Prin. Invest. NASA Tech. Officer CASE Category  
Dewitt, K. J. LERC/Shaw, R. J. 41-Aero Engr  
Keith, T. G.

**NAG 3-157** **University of Toledo** **4160**  
Interference susceptibility of digital television systems  
Period Obligations  
01/09/81-07/27/84 FY83: \$58,990 TOTAL: \$137,769  
Prin. Invest. NASA Tech. Officer CASE Category  
Kwatra, S. C. LERC/Stevens, G. H. 45-Elec Engr

**NAG 3-276** **University of Toledo** **4161**  
A study of friction and wear of metals in corrosive aqueous solutions  
Period Obligations  
04/15/82-04/14/84 FY83: TOTAL: \$28,686  
Prin. Invest. NASA Tech. Officer CASE Category  
Rengstorff, G. W. LERC/Buckley, D. H. 43-Chem Engr  
LERC/Loomis, W. R.

**NAG 3-309** **University of Toledo** **4162**  
A laser-Doppler anemometer investigation of a normal shock-wave-boundary layer interaction  
Period Obligations  
07/25/82-10/24/83 FY83: \$8,164 TOTAL: \$32,082  
Prin. Invest. NASA Tech. Officer CASE Category  
Keith, T. G., Jr. LERC/Hingst, W. R. 41-Aero Engr

**NAG 3-355** **University of Toledo** **4163**  
Numerical grid generation and grid patching techniques in practical combustor geometries  
Period Obligations  
11/25/82-11/24/84 FY83: \$100,000 TOTAL: \$100,000  
Prin. Invest. NASA Tech. Officer CASE Category  
Keith, T. G. LERC/Claus, R. W. 46-Mech Engr  
Dewitt, K. J.

**NAG 3-373** **University of Toledo** **4164**  
The analysis and design of a composite wood blade for a large wind turbine  
Period Obligations  
12/05/82-12/04/83 FY83: \$40,000 TOTAL: \$40,000  
Prin. Invest. NASA Tech. Officer CASE Category  
Fu, K. C. LERC/Sullivan, T. L. 49-Engr, NEC  
LERC/Spera, D. A.

**NAG 3-413** **University of Toledo** **4165**  
Amorphous metals for the magnetic cores in small electric motors  
Period Obligations  
06/01/83-08/31/84 FY83: \$56,415 TOTAL: \$56,415  
Prin. Invest. NASA Tech. Officer CASE Category  
Stuart, T. A. LERC/Hansen, I. G. 45-Elec Engr

**NAG 3-415** **University of Toledo** **4166**  
Fluid physics phenomena of resisto jet thrusters  
Period Obligations  
05/01/83-04/30/84 FY83: \$20,000 TOTAL: \$20,000  
Prin. Invest. NASA Tech. Officer CASE Category  
Dewitt, K. J. LERC/Nakanishi, S. 49-Engr, NEC  
Keith, T. G.

**NAG 3-429** **University of Toledo** **4167**  
Computer graphics summer research  
Period Obligations  
06/13/83-09/13/83 FY83: \$4,371 TOTAL: \$4,371  
Prin. Invest. NASA Tech. Officer CASE Category  
White, P. R. LERC/Donovan, L. F. 41-Aero Engr

**NAG 3-452** **University of Toledo** **4168**  
Effect of curvature on heat transfer in a turbulent boundary layer  
Period Obligations  
08/01/83-07/31/84 FY83: \$34,815 TOTAL: \$34,815  
Prin. Invest. NASA Tech. Officer CASE Category  
Jeng, D. R. LERC/Gaugler, R. E. 46-Mech Engr  
Keith, T. G.

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

<b>NAG 5-167</b>	<b>University of Toledo</b>		<b>4169</b>
	Correlation of far ultraviolet extinction and illuminating stars of reflection nebulae		
	<i>Period</i>	<i>Obligations</i>	
	05/01/81-09/30/82	FY83: TOTAL: \$6,405	CASE Category 11-Astronomy
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Witt, W. N.	GSFC/Kondo, Y.	
<b>NAG 5-253</b>	<b>University of Toledo</b>		<b>4170</b>
	Observation of stellar winds in two massive binary stars in known orbits		
	<i>Period</i>	<i>Obligations</i>	
	07/15/82-02/29/84	FY83: \$13,000 TOTAL: \$15,000	CASE Category 11-Astronomy
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Morrison, N. D.	GSFC/Kondo, Y.	
	Garmany, C. D.		
<b>NAG 5-254</b>	<b>University of Toledo</b>		<b>4171</b>
	Southern active chromosphere variables rotational modulation of selected stars		
	<i>Period</i>	<i>Obligations</i>	
	08/01/82-07/31/84	FY83: \$13,263 TOTAL: \$16,763	CASE Category 11-Astronomy
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Bopp, B. W.	GSFC/Kondo, Y.	
<b>NAGW 89</b>	<b>University of Toledo</b>		<b>4172</b>
	Properties of interstellar grains		
	<i>Period</i>	<i>Obligations</i>	
	09/01/80-12/31/83	FY83: TOTAL: \$47,180	CASE Category 11-Astronomy
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Witt, A. N.	HQ-EZ/Stencel, R. E.	
		HQ-EZ/Weiler, E. J.	
<b>NAGW 229</b>	<b>University of Toledo</b>		<b>4173</b>
	Chromospheric activity in the FK Comae stars		
	<i>Period</i>	<i>Obligations</i>	
	09/01/81-02/29/84	FY83: \$6,002 TOTAL: \$15,897	CASE Category 11-Astronomy
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Bopp, B. W.	HQ-EZ/Weiler, E. J.	
		HQ-EZ/Boggess, N. W.	
<b>NCC 3-5</b>	<b>University of Toledo</b>		<b>4174</b>
	Evaluation of the performance of wind turbine concepts and operating wind turbines		
	<i>Period</i>	<i>Obligations</i>	
	09/15/79-09/30/84	FY83: \$15,020 TOTAL: \$289,428	CASE Category 45-Elec Engr
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Keith, T. G.	LERC/Corrigan, R. D.	
	Jeng, D. R.		
	Little, R. R.		
<b>NCC 3-22</b>	<b>University of Toledo</b>		<b>4175</b>
	Coded phase modulation		
	<i>Period</i>	<i>Obligations</i>	
	10/15/82-09/15/84	FY83: \$44,709 TOTAL: \$44,709	CASE Category 45-Elec Engr
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Kwatra, S. C.	LERC/Connolly, D. J.	
<b>NSG 3139</b>	<b>University of Toledo</b>		<b>4176</b>
	Stability analysis of wind turbines with long, flexible blades		
	<i>Period</i>	<i>Obligations</i>	
	02/22/77-09/30/84	FY83: \$14,996 TOTAL: \$347,915	CASE Category 41-Aero Engr
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Keith, T. G., Jr.	LERC/Brown, G. V.	
<b>NSG 3281</b>	<b>University of Toledo</b>		<b>4177</b>
	An investigation of the high frequency performance of series resonant inverters		
	<i>Period</i>	<i>Obligations</i>	
	06/01/79-10/28/83	FY83: \$855 TOTAL: \$91,578	CASE Category 45-Elec Engr
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Stuart, T. A.	LERC/Gruber, R. P.	
<b>NSG 5359</b>	<b>University of Toledo</b>		<b>4178</b>
	Ultraviolet observations of various type supergiants		
	<i>Period</i>	<i>Obligations</i>	
	06/01/79-08/31/83	FY83: TOTAL: \$17,544	CASE Category 11-Astronomy
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Morrison, N. D.	GSFC/Boggess, A.	
<b>NSG 7301</b>	<b>University of Toledo</b>		<b>4179</b>
	Physical study of comets		
	<i>Period</i>	<i>Obligations</i>	
	01/01/77-06/30/84	FY83: TOTAL: \$61,366	CASE Category 32-Geological Sci
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Delsemme, A. H.	HQ-EL/Brinton, H. C.	
<b>NAG 1-255</b>	<b>Wright State University</b>		<b>4180</b>
	Synthesis and characterization of soluble melt-processable and thermally-curable polyimides and polyphenylenes		
	<i>Period</i>	<i>Obligations</i>	
	02/01/82-01/31/84	FY83: \$45,072 TOTAL: \$75,332	CASE Category 12-Chemistry
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Harris, F. W.	LARC/Hergenrother, P. M.	
		LARC/St. Clair, T. L.	
<b>NCA 2-875002</b>	<b>Wright State University</b>		<b>4181</b>
	Motion sickness in the cat: Chemical aspects		
	<i>Period</i>	<i>Obligations</i>	
	01/01/80-09/30/82	FY83: TOTAL: \$59,644	CASE Category 51-Biological Sci
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Crampton, G. H.	ARC/Daunton, N. G.	
<b>NCC 2-204</b>	<b>Wright State University</b>		<b>4182</b>
	Functional significance of sensory interactions in the vestibular system in relation to self-motion perception and motion sickness		
	<i>Period</i>	<i>Obligations</i>	
	08/01/82-07/31/83	FY83: TOTAL: \$20,478	CASE Category 61-Biol Aspects
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	
	Crampton, G. H.	ARC/Daunton, N. G.	

**NASA'S UNIVERSITY PROGRAM  
OHIO (Continued)**

**NCC 2-229 Wright State University 4183**  
Evaluation of putative neurochemical intermediaries in space motion sickness  
*Period* *Obligations*  
01/01/83-12/31/83 FY83: \$45,949 TOTAL: \$45,949  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Crampton, G. H. ARC/Daunton, N. G. 51-Biological Sci  
Lucot, J. B.

**NGT 36-024-790 Wright State University 4184**  
Aerospace medicine residency program  
*Period* *Obligations*  
07/01/78-12/31/83 FY83: \$267,657 TOTAL: \$1,209,889  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mohler, S. R. HQ-EB/Lesane, G. 56-Medical Sciences  
HQ-EB/Nicogossian, A. E.

**OKLAHOMA**

**NAG 2-76 Oklahoma State University 4185**  
Correlation of transonic-cone preston-tube data and skin friction  
*Period* *Obligations*  
11/01/80-04/30/83 FY83: TOTAL: \$60,210  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Reed, T. D. ARC/Steinle, F. W., Jr. 41-Aero Engr

**NAG 3-74 Oklahoma State University 4186**  
Investigations of flow fields found in typical combustor geometries  
*Period* *Obligations*  
07/01/80-04/15/84 FY83: \$29,740 TOTAL: \$231,130  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lilley, D. G. LERC/Holderman, J. D. 46-Mech Engr  
McLaughlin, D. K.

**NAGW 26 Oklahoma State University 4187**  
Microbial ecology of extreme environments: Antarctic dry valley yeasts and growth in substrate-limited habitats  
*Period* *Obligations*  
12/01/79-08/31/84 FY83: \$43,000 TOTAL: \$189,632  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Clayton, R. N. HQ-EB/Devincenzi, D. L.  
Mayeda, T. K. HQ-EB/Rambler, M. 51-Biological Sci  
Hutcheon, I. D.

**NAS 2-10467 Oklahoma State University 4188**  
Operation of a visitor, tour, and an aeronautical research information and communication program  
*Period* *Obligations*  
12/01/79-11/30/81 FY83: TOTAL: \$310,142  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wiggins, K. E. ARC/Miller, S. A. 41-Aero Engr  
ARC/Fenrick, C. J.

**NASW 3313 Oklahoma State University 4189**  
Spacemobile operation and management of aerospace education services project  
*Period* *Obligations*  
10/01/79-09/30/84 FY83: \$2,946,600 TOTAL: \$6,505,886  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wiggins, K. HQ-LF/Bilbrough, L. 99-Multi-Discip

**NASW 3716 Oklahoma State University 4190**  
Administration of NASA summer high school apprenticeship research program  
*Period* *Obligations*  
03/01/83-09/30/83 FY83: \$252,000 TOTAL: \$252,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Unavailable HQ-LF/Bilbrough, L. 99-Multi-Discip

**NAS13-184 Oklahoma State University 4191**  
Development of LANDSAT/geobased information system requirements for substate demonstration project  
*Period* *Obligations*  
09/01/81-08/31/82 FY83: TOTAL: \$17,975  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Walsh, S. J. NSTL/Barlow, R. M. 32-Geological Sci

**NSG 7640 Oklahoma State University 4192**  
Remote sensing applications to Oklahoma resources and environmental problems  
*Period* *Obligations*  
09/01/79-08/30/85 FY83: TOTAL: \$485,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Walsh, S. J. HQ-EL/Tuyahov, A. J. 31-Atmos Sci

**NASW 3659 Southeastern Oklahoma State Univ. 4193**  
Operation of the Kerr Industrial Application center  
*Period* *Obligations*  
07/01/82-06/30/84 FY83: \$100,000 TOTAL: \$272,322  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harmon, J. HQ-LG/Bivins, R. G. 99-Multi-Discip  
HQ-LG/Ault, L. A.

**NAG 9-18 Univ of Oklahoma - Health Science Ctr 4194**  
Inhibition by camp by lymphocyte plasma membrane endogenous phosphorylating study  
*Period* *Obligations*  
06/01/81-11/30/83 FY83: TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nordquist, R. JSC/Lucid, S. 56-Medical Sciences

**NAS 2-10408 Univ of Oklahoma - Health Science Ctr 4195**  
Cosmos 1981 experiment: Carotid arterial flow and pressure measurement of primates  
*Period* *Obligations*  
10/01/79-10/31/84 FY83: \$20,056 TOTAL: \$119,424  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stone, H. L. ARC/Heinrich, M. R. 51-Biological Sci

# **NASA'S UNIVERSITY PROGRAM** **OKLAHOMA (Continued)**

**NCA 2-580101 Univ of Oklahoma - Health Science Ctr 4196**  
Cardiovascular response in the exercise-trained and exercise-conditioned dog

Period	Obligations	
07/01/81-09/30/83	FY83: \$11,106	TOTAL: \$43,250
Prin. Invest.	NASA Tech. Officer	CASE Category
Stone, H. L.	ARC/Sandler, H.	51-Biological Sci

**NCC 2-24 Univ of Oklahoma - Health Science Ctr 4197**  
Central and peripheral mechanisms underlying cardiovascular deconditioning in the unanesthetized primate

Period	Obligations	
11/01/79-10/31/83	FY83: \$95,296	TOTAL: \$333,521
Prin. Invest.	NASA Tech. Officer	CASE Category
Stone, H. L.	ARC/Sandler, H.	59-Life Sci, NEC

**NAG 5-283 University of Oklahoma - Norman 4198**  
Initialization experiments with numerical weather prediction mesoscale models

Period	Obligations	
11/15/82-09/30/84	FY83: \$46,002	TOTAL: \$46,002
Prin. Invest.	NASA Tech. Officer	CASE Category
Gal-chen, T.	GSFC/Uccellini, L. W.	31-Atmos Sci
	GSFC/Simpson, J.	

**NAG 5-289 University of Oklahoma - Norman 4199**  
Research relative to variational mesoscale satellite data assimilation and initialization

Period	Obligations	
01/15/83-01/14/84	FY83: \$75,720	TOTAL: \$75,720
Prin. Invest.	NASA Tech. Officer	CASE Category
Sasaki, Y. K.	GSFC/Koch, S. E.	31-Atmos Sci
Goerss, J. S.	GSFC/Uccellini, L.	

**NAG 8-372 University of Oklahoma - Norman 4200**  
Observations of the rapid variable AE AQR in the High Energy Astronomical Observatory-B guest investigator program

Period	Obligations	
09/15/80-09/14/83	FY83:	TOTAL: \$5,892
Prin. Invest.	NASA Tech. Officer	CASE Category
Chincarini, G.	MSFC/Stone, J. F.	11-Astronomy

**NAS 8-34749 University of Oklahoma - Norman 4201**  
Analysis of lidar, radar and satellite measurements on severe thunderstorms and their environment

Period	Obligations	
04/27/82-04/26/84	FY83: \$74,247	TOTAL: \$146,388
Prin. Invest.	NASA Tech. Officer	CASE Category
Doviak, R. J.	MSFC/Fitzjarrald, D. E.	31-Atmos Sci
Bluestins, H. B.	MSFC/Fitchl, G. H.	

**NCC 5-600 University of Oklahoma - Norman 4202**  
Determining the probability of lightning strikes to aircraft

Period	Obligations	
04/01/82-12/31/83	FY83: \$57,925	TOTAL: \$67,925
Prin. Invest.	NASA Tech. Officer	CASE Category
Nazur, V.	GSFC/Gerlich, J. C.	39-Env Sci, NEC
Rust, W. D.	GSFC/Carr, R. E.	
Sasaki, Y.		

## **OREGON**

**NAG 1-160 Oregon Graduate Center 4203**  
Systematic global measurements of methane and carbon monoxide

Period	Obligations	
03/03/81-03/02/84	FY83: \$153,140	TOTAL: \$358,909
Prin. Invest.	NASA Tech. Officer	CASE Category
Rasmussen, R. A.	LARC/Reichle, H. G., Jr.	31-Atmos Sci
Khalil, M. A.	LARC/Hypes, W. D.	

**NAG 1-382 Oregon Graduate Center 4204**  
Global tropospheric experiment/phase 1 supporting measurements for total nonmethane hydrocarbons, carbon monoxide, and related halocarbons

Period	Obligations	
07/01/83-06/30/84	FY83: \$62,188	TOTAL: \$62,188
Prin. Invest.	NASA Tech. Officer	CASE Category
Rasmussen, R. A.	LARC/Mugler, J. P.	31-Atmos Sci
Khalil, M. A.	LARC/Harriss, R. C.	

**NAG 3-434 Oregon Graduate Center 4205**  
Evaluation of single crystal la B cathodes for use in a high frequency backward wave oscillator tube

Period	Obligations	
06/30/83-06/29/84	FY83: \$35,000	TOTAL: \$35,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Swanson, L. W.	LERC/Wintucky, E. G.	19-Phys Sci, NEC
Davis, P. R.		

**NAGW 280 Oregon Graduate Center 4206**  
Fluorocarbons, chlorocarbons, and nitrous oxide: Continuous measurements at 5 global sites

Period	Obligations	
12/01/81-11/30/83	FY83: \$236,000	TOTAL: \$408,342
Prin. Invest.	NASA Tech. Officer	CASE Category
Rasmussen, R. A.	HQ-EE/Watson, R. T.	31-Atmos Sci
	HQ-EE/Hilsenrath, E.	

**NAGW 457 Oregon Graduate Center 4207**  
Oceanic sources and sinks of organic sulfur compounds and methyl malices

Period	Obligations	
04/15/83-11/15/83	FY83: \$42,000	TOTAL: \$42,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Rasmuski, R. A.	HQ-EB/Rambler, G.	54-Env Biology
Khalil, A. F.	HQ-EB/Devincenzi, D. L.	

**NGT 38-014-800 Oregon Graduate Center 4208**  
Graduate student researchers program

Period	Obligations	
05/01/81-04/30/84	FY83: \$14,250	TOTAL: \$37,250
Prin. Invest.	NASA Tech. Officer	CASE Category
Elliott, R. A.	HQ-LB/Owens, F. C.	13-Physics



**NASA'S UNIVERSITY PROGRAM**  
**OREGON (Continued)**

<b>NSG 2387</b>	<b>Oregon Graduate Center</b>		<b>4209</b>
	Evaluation of turbulence induced noise in coherent anti-Stokes Raman scattering		
	<i>Period</i>	<i>Obligations</i>	
	06/01/79-12/31/82	FY83: TOTAL: \$71,995	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Elliott, R. A.	ARC/McKenzie, R. L.	13-Physics	
<b>NAS 8-33575</b>	<b>Oregon Health Sciences University</b>		<b>4210</b>
	Counter current distribution of biologic cells		
	<i>Period</i>	<i>Obligations</i>	
	11/16/78-12/31/82	FY83: \$2,332 TOTAL: \$228,745	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Brooks, D. E.	MSFC/Fogle, V.	47-Materials Engr	
	MSFC/Savage, W. H.		
<b>NAS 8-35333</b>	<b>Oregon Health Sciences University</b>		<b>4211</b>
	Cell partition in two polymer aqueous phases		
	<i>Period</i>	<i>Obligations</i>	
	05/05/83-02/27/86	FY83: \$88,000 TOTAL: \$88,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Brooks, D. E.	MSFC/Fogle, V.	59-Life Sci, NEC	
	MSFC/Snyder, R. S.		
<b>NAG 3-87</b>	<b>Oregon State University</b>		<b>4212</b>
	Wind turbine structural design and analysis		
	<i>Period</i>	<i>Obligations</i>	
	07/15/80-03/15/84	FY83: TOTAL: \$128,732	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Thresher, R. W.	LERC/Spera, D. A.	49-Engr, NEC	
	LERC/Sullivan, T. L.		
<b>NAG 3-278</b>	<b>Oregon State University</b>		<b>4213</b>
	Performance modeling for horizontal axis wind turbines		
	<i>Period</i>	<i>Obligations</i>	
	04/25/82-03/30/84	FY83: \$20,716 TOTAL: \$100,594	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wilson, R. E.	LERC/Savino, J. M.	41-Aero Engr	
<b>NAG 5-51</b>	<b>Oregon State University</b>		<b>4214</b>
	Investigation of small-scale terrain effects within climate models		
	<i>Period</i>	<i>Obligations</i>	
	05/15/80-11/30/83	FY83: \$41,000 TOTAL: \$195,530	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Deardorff, J. W.	GSFC/Shukla, J.	31-Atmos Sci	
	GSFC/Randall, D.		
<b>NAG 5-206</b>	<b>Oregon State University</b>		<b>4215</b>
	Diagnosis of seasonal climate change		
	<i>Period</i>	<i>Obligations</i>	
	10/01/81-02/29/84	FY83: \$60,000 TOTAL: \$120,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gates, W. L.	GSFC/Shukla, J.	31-Atmos Sci	
Esbensen, S. K.			
Kim, J. W.			
<b>NAG 9-2</b>	<b>Oregon State University</b>		<b>4216</b>
	Neotectonics of Pakistan		
	<i>Period</i>	<i>Obligations</i>	
	02/01/80-07/31/83	FY83: TOTAL: \$135,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lawrence, R. D.	JSC/Phinney, W. C.	32-Geological Sci	
<b>NAG 9-63</b>	<b>Oregon State University</b>		<b>4217</b>
	Chemical studies of lunar and meteoritic samples		
	<i>Period</i>	<i>Obligations</i>	
	02/01/83-01/31/84	FY83: \$69,400 TOTAL: \$69,400	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Schmitt, R. A.	JSC/Dietrich, J. W.	32-Geological Sci	
Smith, M. R.			
<b>NAGW 305</b>	<b>Oregon State University</b>		<b>4218</b>
	Airborne laser-fluoresensor evaluation of biologic logical properties in a coastal ocean region		
	<i>Period</i>	<i>Obligations</i>	
	12/01/81-11/30/82	FY83: TOTAL: \$48,585	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Small, L. F.	HQ-EE/Carder, K. L.	33-Oceanography	
Frey, B. E.	HQ-EE/Wilson, W. S.		
<b>NAS 5-27369</b>	<b>Oregon State University</b>		<b>4219</b>
	Tectonic studies of the gulf of California		
	<i>Period</i>	<i>Obligations</i>	
	09/30/82-12/31/83	FY83: \$40,000 TOTAL: \$70,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Couch, R. W.	GSFC/Mead, G.	32-Geological Sci	
Ness, G. E.			
Fehler, M. C.			
<b>NCA 2-586201</b>	<b>Oregon State University</b>		<b>4220</b>
	Vegetation classification and map of the central Siskiyou Mountains, Oregon		
	<i>Period</i>	<i>Obligations</i>	
	10/15/81-10/14/83	FY83: \$29,521 TOTAL: \$45,521	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Frenkel, R. E.	ARC/Mouat, D. A.	32-Geological Sci	
Lewis, A.	ARC/Norman, S. D.		
<b>NCA 2-586301</b>	<b>Oregon State University</b>		<b>4221</b>
	Acquisition and application of near surface radiometric data for atmospheric correction of airborne scanner data		
	<i>Period</i>	<i>Obligations</i>	
	07/18/83-09/15/83	FY83: \$12,520 TOTAL: \$12,520	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Schrumpf, B. J.	ARC/Peterson, D. L.	31-Atmos Sci	
Hall, M. J.	ARC/Mouat, D. A.		
<b>NGL 38-002-039</b>	<b>Oregon State University</b>		<b>4222</b>
	Lunar sample analysis		
	<i>Period</i>	<i>Obligations</i>	
	01/19/71-05/31/83	FY83: TOTAL: \$769,981	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Schmitt, R. A.	JSC/Dietrich, J. W.	13-Physics	

# **NASA'S UNIVERSITY PROGRAM** **OREGON (Continued)**

**NGL 38-002-053**      **Oregon State University**      **4223**  
Development and operation of an environmental remote sensing applications laboratory  
*Period*      *Obligations*  
03/16/72-04/30/86      FY83: \$125,000      TOTAL: \$1,600,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Schrumpf, B. J.      HQ-EL/Tuyahov, A. J.      39-Env Sci, NEC

**NSG 5353**      **Oregon State University**      **4224**  
Numerical simulation of large scale ocean atmosphere coupling and the ocean's role in climate  
*Period*      *Obligations*  
05/01/79-12/14/82      FY83:      TOTAL: \$580,259  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Gates, W. L.      GSFC/Halem, M.      31-Atmos Sci

**NSG 7178**      **Oregon State University**      **4225**  
Examination of the suggested modes of origin of channels found on the Moon and Mars  
*Period*      *Obligations*  
01/01/76-02/28/84      FY83: \$32,081      TOTAL: \$208,437  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Komar, P. D.      HQ-EL/Boyce, J. M.      32-Geological Sci  
HQ-EL/Holt, H. E.

**NAGW 222**      **University of Oregon - Eugene**      **4226**  
Far infrared measurements of trace constituents  
*Period*      *Obligations*  
07/15/81-07/14/84      FY83: \$126,848      TOTAL: \$350,385  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Nolt, I. G.      HQ-EE/Kakar, R. K.      31-Atmos Sci  
Radostitz, J. V.      HQ-EE/Watson, R. T.

**NCA 2-587201**      **University of Oregon - Eugene**      **4227**  
Far infrared observations of bok golbules and dark clouds  
*Period*      *Obligations*  
04/01/82-12/31/82      FY83:      TOTAL: \$1,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Nolt, I. G.      ARC/Caroff, L. J.      11-Astronomy  
ARC/Black, D. C.

## **PENNSYLVANIA**

**NAG 1-190**      **Carnegie - Mellon University**      **4228**  
Advanced automated control of aircraft in terminal  
*Period*      *Obligations*  
06/01/81-09/30/83      FY83: \$165,000      TOTAL: \$204,738  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Siewiorek, D. P.      LARC/Lupton, A. O.      45-Elec Engr  
Segall, Z.      LARC/Palumbo, D. L.

**NAG 1-265**      **Carnegie - Mellon University**      **4229**  
Novel wind-tunnel data processing  
*Period*      *Obligations*  
05/01/82-10/31/83      FY83:      TOTAL: \$49,872  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Casasent, D.      LARC/Hendricks, H. D.      19-Phys Sci, NEC  
LARC/Magee, C. J.

**NAG 1-395**      **Carnegie - Mellon University**      **4230**  
Advanced detectors and signal processing for bubble memories  
*Period*      *Obligations*  
09/01/83-08/31/84      FY83: \$65,001      TOTAL: \$65,001  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Kryder, M. H.      LARC/Hayes, P. J.      45-Elec Engr  
Greve, D. W.

**NAG 1-409**      **Carnegie - Mellon University**      **4231**  
Deformation measurements and modeling using optical data processing  
*Period*      *Obligations*  
10/01/83-03/31/84      FY83: \$25,000      TOTAL: \$25,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Casasent, D.      LARC/Magee, C. J.      45-Elec Engr  
LARC/Stermer, R. L.

**NAG 3-5**      **Carnegie - Mellon University**      **4232**  
Electro-optical system controller and processor  
*Period*      *Obligations*  
11/01/79-10/30/85      FY83:      TOTAL: \$500,820  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Casasent, D.      LERC/Baumick, R. J.      45-Elec Engr  
LERC/Sellers, J. F.

**NAG 3-21**      **Carnegie - Mellon University**      **4233**  
Formulate a multi-dimensional, unsteady, turbulent, compressible, reacting flow code for Otto cycle codes and engines  
*Period*      *Obligations*  
12/15/79-10/29/83      FY83:      TOTAL: \$243,118  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Ramos, J. I.      LERC/Shih, T.      46-Mech Engr  
LERC/Shock, H. J.

**NAG 3-166**      **Carnegie - Mellon University**      **4234**  
Turbulent flow in cryogenic face seals  
*Period*      *Obligations*  
03/15/81-10/30/83      FY83: \$27,430      TOTAL: \$102,585  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Hughes, W. F.      LERC/Hendricks, R. C.      46-Mech Engr

**NAG 3-231**      **Carnegie - Mellon University**      **4235**  
Simulation of aerodynamic damping/mistuning friction interaction in bladed disc vibration  
*Period*      *Obligations*  
12/05/81-10/03/83      FY83: \$59,530      TOTAL: \$117,359  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Griffin, J. H.      LERC/Kielb, R. E.      41-Aero Engr  
Sinha, A.

**NAG 3-367**      **Carnegie - Mellon University**      **4236**  
Internship for graduate education in vibration  
*Period*      *Obligations*  
01/09/83-01/08/84      FY83: \$29,317      TOTAL: \$29,317  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Griffin, J. H.      LERC/Kielb, R. E.      46-Mech Engr

**NASA'S UNIVERSITY PROGRAM  
PENNSYLVANIA (Continued)**

**NAG 3-401** **Carnegie - Mellon University** **4237**  
Turbulent swirling combustion  
*Period* *Obligations*  
03/10/83-03/09/84 FY83: \$73,127 TOTAL: \$73,127  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sommer, H. T. LERC/Tacina, R. R. 46-Mech Engr

**NAG 3-404** **Carnegie - Mellon University** **4238**  
Gravity effects on liquid fuel pool fires: Ignition, flame spread and pool burning  
*Period* *Obligations*  
02/21/83-01/20/84 FY83: \$39,975 TOTAL: \$39,975  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sirignano, W. A. LERC/Sacksteder, K. R. 49-Engr, NEC

**NAG 3-437** **Carnegie - Mellon University** **4239**  
Fundamental studies on a heat-driven lamp  
*Period* *Obligations*  
09/01/83-08/31/84 FY83: \$34,843 TOTAL: \$34,843  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lawless, J. L. LERC/Chubb, D. L. 46-Mech Engr

**NAS 1-17216** **Carnegie - Mellon University** **4240**  
High strength/toughness cryogenic steel plates and bars  
*Period* *Obligations*  
11/17/82-09/17/83 FY83: \$93,868 TOTAL: \$93,868  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bhat, G. K. LARC/Rush, H. F. 47-Materials Engr

**NASW 3673** **Carnegie - Mellon University** **4241**  
Exploratory research on robust inventory models  
*Period* *Obligations*  
08/16/82-11/15/82 FY83: TOTAL: \$24,051  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Leinhardt, S. HQ-NS/Fontaine, M. 21-Mathematics

**NCC 3-32** **Carnegie - Mellon University** **4242**  
Measurements in liquid fuel sprays  
*Period* *Obligations*  
05/25/83-11/25/83 FY83: \$10,000 TOTAL: \$10,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Chigier, N. LERC/Neely, G. M. 46-Mech Engr

**NGT 39-087-800** **Carnegie - Mellon University** **4243**  
Graduate student researchers program  
*Period* *Obligations*  
06/01/81-05/31/84 FY83: \$15,000 TOTAL: \$40,590  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fix, G. J. HQ-LB/Owens, F. C. 21-Mathematics

**NGT 39-087-801** **Carnegie - Mellon University** **4244**  
Graduate student researchers program  
*Period* *Obligations*  
06/01/82-05/31/84 FY83: \$15,000 TOTAL: \$28,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Swedlow, J. L. HQ-LB/Carter, C. H. 46-Mech Engr

**NSG 7585** **Carnegie - Mellon University** **4245**  
Iron-60 as a heat source and chronometer in early solar system  
*Period* *Obligations*  
05/01/79-04/30/83 FY83: TOTAL: \$183,800  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kohman, T. P. HQ-EL/Hartung, J. 32-Geological Sci

**NAG 1-110** **Drexel University** **4246**  
Rigorous analytical theory for boundary-free incompressible fluid and homogeneous turbulence  
*Period* *Obligations*  
11/01/80-10/31/82 FY83: TOTAL: \$82,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rosen, G. H. LARC/Gatski, T. B. 46-Mech Engr  
LARC/Shoosmith, J. N.

**NAG 1-200** **Drexel University** **4247**  
Research on atmospheric volcanic emissions  
*Period* *Obligations*  
06/01/81-05/31/83 FY83: \$5,000 TOTAL: \$257,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Friend, J. P. LARC/Fuller, W. H., Jr. 31-Atmos Sci  
Zoller, W. H. LARC/McMaster, L. R.

**NAG 1-243** **Drexel University** **4248**  
Research on singular perturbation methods for the output feedback problem  
*Period* *Obligations*  
01/01/82-12/31/83 FY83: \$49,410 TOTAL: \$101,585  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Calise, A. J. LARC/Price, D. B. 41-Aero Engr

**NAG 1-247** **Drexel University** **4249**  
Computer aided design and manufacturing (CAD/CAM) support to the total wheelchair project  
*Period* *Obligations*  
01/01/82-12/31/83 FY83: TOTAL: \$44,738  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rogers, V. A. LARC/Baucom, R. M. 49-Engr, NEC  
LARC/Fulton, R. E.

**NAG 1-335** **Drexel University** **4250**  
Theory of disordered solids  
*Period* *Obligations*  
02/01/83-01/31/84 FY83: \$28,500 TOTAL: \$28,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bose, S. M. LARC/Clark, I. O. 19-Phys Sci, NEC

**NAG 2-8** **Drexel University** **4251**  
Application of variable structure system theory to aircraft flight control  
*Period* *Obligations*  
01/01/80-03/31/83 FY83: TOTAL: \$112,200  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Calise, A. J. ARC/Meyer, G. 49-Engr, NEC

**NASA'S UNIVERSITY PROGRAM**  
**PENNSYLVANIA (Continued)**

<b>NAG 2-10</b>	<b>Drexel University</b>		<b>4252</b>
	Experiments in the formation of aerosols by photo-oxidation of sulfur dioxide		
	<i>Period</i>	<i>Obligations</i>	
	01/01/80-01/31/83	FY83: TOTAL: \$57,900	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Friend, J. P.	ARC/Farlow, N. H.	31-Atmos Sci
<b>NAG 3-1</b>	<b>Drexel University</b>		<b>4253</b>
	Pollutant formation in monodisperse fuel spray combustion		
	<i>Period</i>	<i>Obligations</i>	
	11/01/79-04/30/83	FY83: TOTAL: \$156,300	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Cernansky, N. P.	LERC/Humenik, F.	41-Aero Engr
<b>NAG 3-14</b>	<b>Drexel University</b>		<b>4254</b>
	Microstructure and fatigue behavior of rheocast IN-100		
	<i>Period</i>	<i>Obligations</i>	
	02/01/80-03/02/83	FY83: TOTAL: \$169,495	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Apelian, D.	LERC/Glasgow, T. K.	47-Materials Engr
		LERC/Gray, H. R.	
<b>NAG 3-183</b>	<b>Drexel University</b>		<b>4255</b>
	Thermal stability of distillate hydrocarbon convergent-divergent nozzles		
	<i>Period</i>	<i>Obligations</i>	
	10/01/81-06/28/84	FY83: \$73,000 TOTAL: \$203,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Cohen, R. S.	LERC/Bittker, D. A.	12-Chemistry
	Cernansky, N. P.		
<b>NAG 3-382</b>	<b>Drexel University</b>		<b>4256</b>
	Combustion characteristics in the transition region of liquid fuel sprays		
	<i>Period</i>	<i>Obligations</i>	
	01/15/83-01/14/84	FY83: \$65,000 TOTAL: \$65,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Cernansky, N. P.	LERC/Humenik, F. M.	46-Mech Engr
	Namer, I.		
<b>NAG 5-208</b>	<b>Drexel University</b>		<b>4257</b>
	Lower atmospheric composition of Jupiter from Voyager infrared measurements		
	<i>Period</i>	<i>Obligations</i>	
	09/15/81-09/14/83	FY83: TOTAL: \$26,100	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Abbas, M. M.	GSFC/Maguire, W. C.	11-Astronomy
		GSFC/Kunde, V. G.	
<b>NAG 5-620</b>	<b>Drexel University</b>		<b>4258</b>
	Improvements to the ECC ozonesonde		
	<i>Period</i>	<i>Obligations</i>	
	04/01/83-08/31/84	FY83: \$14,631 TOTAL: \$14,631	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Thornton, D. C.	GSFC/Holland, A. C.	12-Chemistry
<b>NAGW 431</b>	<b>Drexel University</b>		<b>4259</b>
	Stratospheric temperature and constituent distribution from inversion of thermal emission measurements of the Earth's limb		
	<i>Period</i>	<i>Obligations</i>	
	04/01/83-03/31/84	FY83: \$45,900 TOTAL: \$45,900	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Abbas, M. M.	HQ-EE/Hilsenrath, E.	31-Atmos Sci
	Kunde, V. G.	HQ-EE/Watson, R. T.	
<b>NAS 1-14393</b>	<b>Drexel University</b>		<b>4260</b>
	Science support for the limb infrared monitor of the stratosphere experiment		
	<i>Period</i>	<i>Obligations</i>	
	04/01/76-07/31/83	FY83: \$5,891 TOTAL: \$134,447	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	House, F. B.	LARC/Sullivan, E. M.	31-Atmos Sci
		LARC/Russell, J. M., III	
<b>NAS 1-16428</b>	<b>Drexel University</b>		<b>4261</b>
	Scientific investigations for the Earth radiation budget experiment (ERBE)		
	<i>Period</i>	<i>Obligations</i>	
	09/17/80-09/17/85	FY83: \$50,000 TOTAL: \$148,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	House, F. B.	LARC/Hall, J. B., Jr.	31-Atmos Sci
		LARC/Barkstrom, B. R.	
<b>NAS 5-22946</b>	<b>Drexel University</b>		<b>4262</b>
	Science support for the Earth radiation budget experiment on Nimbus G		
	<i>Period</i>	<i>Obligations</i>	
	01/12/76-01/31/82	FY83: TOTAL: \$162,908	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	House, F. B.	GSFC/Cherrix, G. T.	13-Physics
<b>NAS 5-26794</b>	<b>Drexel University</b>		<b>4263</b>
	Nimbus Earth radiation belt study		
	<i>Period</i>	<i>Obligations</i>	
	11/10/81-11/10/83	FY83: \$23,500 TOTAL: \$73,500	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	House, F. B.	GSFC/Kyle, H. L.	31-Atmos Sci
		GSFC/Hurley, E. J.	
<b>NAS 8-34833</b>	<b>Drexel University</b>		<b>4264</b>
	Implementation of limited area and mesoscale prediction system software		
	<i>Period</i>	<i>Obligations</i>	
	09/20/82-09/19/83	FY83: TOTAL: \$15,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	S'cnafer, A.	MSFC/Wilson, G. S.	31-Atmos Sci
	Kreitzberg, C.	MSFC/Arnold, J. E.	
	Perkey, D. J.		
<b>NCC 1-33</b>	<b>Drexel University</b>		<b>4265</b>
	Infrared heterodyne observation of the stratosphere from balloon based platform		
	<i>Period</i>	<i>Obligations</i>	
	01/09/80-01/08/82	FY83: TOTAL: \$40,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Abbas, M. M.	LARC/Allario, F.	31-Atmos Sci
	House, F. B.	LARC/Alvarez, J. M.	

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**NSG 1496 Drexel University 4266**  
Research on singular perturbation techniques for on-line optimal control

Period	Obligations
02/01/78-12/31/81	FY83: TOTAL: \$137,918
Prin. Invest.	NASA Tech. Officer
Calise, A. J.	LARC/Price, D. B. CASE Category
	41-Aero Engr

**NAG 3-135 Lehigh University 4273**  
Coupled wake-oscillator models for mistuned blade flutter

Period	Obligations
12/08/80-12/31/84	FY83: TOTAL: \$99,010
Prin. Invest.	NASA Tech. Officer
Johnson, S. H.	LERC/Lubomski, J. F. CASE Category
Owczarek, J. A.	46-Mech Engr

**NSG 1606 Drexel University 4267**  
Deformation characteristics and failure modes of notched graphite polyimide composites at room and elevated temperatures

Period	Obligations
07/01/79-12/31/83	FY83: \$14,880 TOTAL: \$129,780
Prin. Invest.	NASA Tech. Officer
Awerbuch, J.	LARC/Poe, C. C., Jr. CASE Category
Kamel, I.	LARC/Kennedy, J. M. 47-Materials Engr

**NAG 9-45 Lehigh University 4274**  
Shock and thermal history of iron and chondritic meteorites

Period	Obligations
04/01/83-03/31/84	FY83: \$93,000 TOTAL: \$93,000
Prin. Invest.	NASA Tech. Officer
Goldstein, J. I.	JSC/Dietrich, J. W. CASE Category
Williams, D. B.	47-Materials Engr
Sellamuthu, R.	

**NSG 2357 Drexel University 4268**  
Feasibility studies for light scattering experiments in space to determine the velocity relaxation of small particles in a fluid

Period	Obligations
01/01/79-06/30/83	FY83: TOTAL: \$200,000
Prin. Invest.	NASA Tech. Officer
Acquista, C. A.	ARC/Brooks, W. F. CASE Category
Narducci, L.	ARC/Lum, H. 13-Physics

**NAS 8-32951 Lehigh University 4275**  
Experiment for materials processing in space production of large particle size monodisperse latexes

Period	Obligations
02/22/78-07/31/83	FY83: \$160,750 TOTAL: \$692,065
Prin. Invest.	NASA Tech. Officer
Vanderhoff, J. W.	MSFC/Yost, V. CASE Category
	MSFC/Kornfield, D. M. 51-Biological Sci

**NSG 6035 Drexel University 4269**  
A study of optimal electrode preparation for the electrochemical concentration cell ozonesonde

Period	Obligations
07/01/79-11/30/82	FY83: TOTAL: \$87,592
Prin. Invest.	NASA Tech. Officer
Thornton, D. C.	GSFC/Torres, A. L. CASE Category
	12-Chemistry

**NCA 2-380201 Lehigh University 4276**  
Infrared intensities of gaseous PH<sub>3</sub>

Period	Obligations
11/01/81-12/31/82	FY83: TOTAL: \$7,668
Prin. Invest.	NASA Tech. Officer
Lovejoy, R. W.	ARC/Boese, R. W. CASE Category
	31-Atmos Sci

**NCA 2-270201 Hahnemann Medical College & Hospital 4270**  
The intrinsic organization of the vestibular complex in rat: Further characterization of internuclear connectivity

Period	Obligations
01/01/82-02/28/83	FY83: TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer
Rubertone, J. A.	ARC/Mehler, W. R. CASE Category
	51-Biological Sci

**NCA 2-380301 Lehigh University 4277**  
Absolute infrared line strengths of gaseous phosphine

Period	Obligations
05/01/83-05/01/84	FY83: \$13,996 TOTAL: \$13,996
Prin. Invest.	NASA Tech. Officer
Lovejoy, R. W.	ARC/Boese, R. W. CASE Category
	31-Atmos Sci

**NCA 2-270301 Hahnemann Medical College & Hospital 4271**  
Neurological pathway of the emetic response: Afferent and efferent connections of the area postrema, nucleus of the solitary tract and parvocellular reticular formation

Period	Obligations
03/01/83-03/01/84	FY83: \$20,000 TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer
Rubertone, J. A.	ARC/Mehler, W. R. CASE Category
	51-Biological Sci

**NGR 39-007-011 Lehigh University 4278**  
Crack problems in plates, shells and bonded materials

Period	Obligations
11/30/64-10/31/84	FY83: \$44,995 TOTAL: \$632,100
Prin. Invest.	NASA Tech. Officer
Erdogan, F.	LARC/Crews, J. H., Jr. CASE Category
	LARC/Newman, J. C., Jr. 46-Mech Engr

**NAG 5-614 Indiana University of Pennsylvania 4272**  
Ocean color measurements using the airborne oceanographic lidar

Period	Obligations
11/01/82-04/30/83	FY83: \$2,675 TOTAL: \$2,675
Prin. Invest.	NASA Tech. Officer
Berry, R. E.	GSFC/Hoge, F. E. CASE Category
	33-Oceanography

**NGR 39-007-043 Lehigh University 4279**  
Shock and thermal history of unusual iron meteorites

Period	Obligations
05/24/71-09/30/83	FY83: TOTAL: \$545,441
Prin. Invest.	NASA Tech. Officer
Goldstein, J. I.	HQ-EL/Taylor, L. A. CASE Category
	HQ-EL/Quaide, W. L. 32-Geological Sci

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<b>NGR 39-007-056</b>		<b>Lehigh University</b>	<b>4280</b>
Lunar sample analysis			
<i>Period</i>	<i>Obligations</i>		
01/12/71-07/31/82	FY83: TOTAL: \$498,693		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Goldstein, J. I.	JSC/Warner, J. L.	12-Chemistry	
<b>NAG 1-73</b>		<b>Pennsylvania State Univ. - Univ. Park</b>	<b>4287</b>
The spinning of light aircraft			
<i>Period</i>	<i>Obligations</i>		
06/01/80-12/31/81	FY83: TOTAL: \$44,956		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
McCormick, B. W.	LARC/Chambers, J. R.	41-Aero Engr	
	LARC/Johnson, J. L.		
<b>NSG 3162</b>		<b>Lehigh University</b>	<b>4281</b>
Blade flutter in compressors and fans numerical simulation of aerodynamic loading			
<i>Period</i>	<i>Obligations</i>		
01/01/78-08/31/82	FY83: TOTAL: \$67,499		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Rockwell, D. O.	LERC/Batterton, P. G.	41-Aero Engr	
Johnson, S. H.	LERC/Kurkov, A. P.		
<b>NSG 5386</b>		<b>Lehigh University</b>	<b>4282</b>
Mass flow and evolution in close binaries including simultaneous observations of X-ray binaries			
<i>Period</i>	<i>Obligations</i>		
07/01/79-06/30/84	FY83: \$20,000 TOTAL: \$61,300		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
McCluskey, G. E.	GSFC/Kondo, Y.	11-Astronomy	
<b>NAS 5-23800</b>		<b>Lincoln University - Pa.</b>	<b>4283</b>
Medical information management system			
<i>Period</i>	<i>Obligations</i>		
11/22/76-02/01/84	FY83: TOTAL: \$181,336		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Frankowsky, J. W.	GSFC/Alterescu, S.	56-Medical Sciences	
	GSFC/Buchanan, P.		
<b>NCA 5-98</b>		<b>Lincoln University - Pa.</b>	<b>4284</b>
Introduction aerospace engineering			
<i>Period</i>	<i>Obligations</i>		
07/01/80-01/31/85	FY83: \$102,537 TOTAL: \$212,888		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Williams, W. W.	GSFC/Mundy, J. R.	49-Engr, NEC	
	GSFC/Chapman, J. W., Sr.		
<b>NCC 2-127</b>		<b>Pennsylvania State Univ. - Hershey Med.</b>	<b>4285</b>
Effect of cerebrospinal fluid hormonal and ionic composition on salt/water metabolism			
<i>Period</i>	<i>Obligations</i>		
03/01/81-02/28/84	FY83: \$24,808 TOTAL: \$84,434		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Severs, W. B.	ARC/Keil, L.	51-Biological Sci	
<b>NAG 1-4</b>		<b>Pennsylvania State Univ. - Univ. Park</b>	<b>4286</b>
Free-field propagation of high intensity noise			
<i>Period</i>	<i>Obligations</i>		
12/01/79-06/30/83	FY83: TOTAL: \$119,536		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Daniel, O. H.	LARC/Norum, T. D.	41-Aero Engr	
	LARC/Seiner, J. M.		
<b>NAG 1-216</b>		<b>Pennsylvania State Univ. - Univ. Park</b>	<b>4288</b>
Experimental study using near field acoustical holography of sound transmission through fuselage sidewall structures			
<i>Period</i>	<i>Obligations</i>		
09/15/81-10/14/83	FY83: \$69,220 TOTAL: \$133,540		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Maynard, J. D.	LARC/Stephens, D. G.	41-Aero Engr	
<b>NAG 2-176</b>		<b>Pennsylvania State Univ. - Univ. Park</b>	<b>4289</b>
Heterogeneous chemistry: Association reactions, cluster formation and surface phenomena pertaining to aerosol climatic effects			
<i>Period</i>	<i>Obligations</i>		
07/01/82-09/30/83	FY83: TOTAL: \$39,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Castleman, W. A., Jr.	ARC/Pollack, J. B.	12-Chemistry	
	ARC/Whitten, R. C.		
<b>NAG 3-68</b>		<b>Pennsylvania State Univ. - Univ. Park</b>	<b>4290</b>
Ceramic materials for high-temperature pressure transducers			
<i>Period</i>	<i>Obligations</i>		
05/20/80-05/17/83	FY83: TOTAL: \$79,479		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bradt, R. C.	LERC/Barranger, J. P.	47-Materials Engr	
<b>NAG 3-91</b>		<b>Pennsylvania State Univ. - Univ. Park</b>	<b>4291</b>
The utilization of alternate fuels in diesel engines			
<i>Period</i>	<i>Obligations</i>		
09/01/80-02/01/84	FY83: \$39,335 TOTAL: \$318,399		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lestz, S. S.	LERC/Clark, J. S.	46-Mech Engr	
<b>NAG 3-177</b>		<b>Pennsylvania State Univ. - Univ. Park</b>	<b>4292</b>
Vapor phase crystal growth of silicon carbide			
<i>Period</i>	<i>Obligations</i>		
04/05/81-10/03/83	FY83: \$5,000 TOTAL: \$95,022		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Spear, K. E.	LERC/Powell, J. A.	47-Materials Engr	
<b>NAG 3-190</b>		<b>Pennsylvania State Univ. - Univ. Park</b>	<b>4293</b>
Structure of evaporating and combusting pressure atomized sprays: Measurements and predictions			
<i>Period</i>	<i>Obligations</i>		
09/01/81-12/31/83	FY83: TOTAL: \$107,473		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Faeth, G. M.	LERC/Tacina, R. R.	46-Mech Engr	

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<b>NAG 3-264      Pennsylvania State Univ. - Univ. Park    4294</b>			
Fatigue damage under a complex loading system			
<i>Period</i>	<i>Obligations</i>		
03/05/82-09/30/84	FY83: \$50,552	TOTAL: \$96,773	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Zamrik, S. Y.	LERC/Leese, G.	47-Materials Engr	
Antolovich, S. D.	LERC/Bill, R. C.		
<b>NAG 5-49      Pennsylvania State Univ. - Univ. Park    4295</b>			
Combined use of remote sensing and seismic observations to infer recent crust deformation, active faulting and stress fields			
<i>Period</i>	<i>Obligations</i>		
05/01/80-11/30/82	FY83:	TOTAL: \$40,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Alexander, S. S.	GSFC/Kouns, C. W.	32-Geological Sci	
Gold, D. P.			
<b>NAG 5-77      Pennsylvania State Univ. - Univ. Park    4296</b>			
Synthesis of regional crust and upper mantle structure from seismic and gravity data			
<i>Period</i>	<i>Obligations</i>		
06/15/80-11/30/82	FY83:	TOTAL: \$40,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Alexander, S. S.	GSFC/Kouns, C. W.	32-Geological Sci	
Lavin, P. M.			
<b>NAG 5-100      Pennsylvania State Univ. - Univ. Park    4297</b>			
High angular resolution X-ray and X-ray ultraviolet astronomy observations			
<i>Period</i>	<i>Obligations</i>		
10/01/80-09/30/84	FY83:	TOTAL: \$702,807	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Garmire, G. P.	GSFC/Early, L. J.	11-Astronomy	
	GSFC/Pless, R. H.		
<b>NAG 5-184      Pennsylvania State Univ. - Univ. Park    4298</b>			
Development of an interactive method for remote determination of surface moisture patterns			
<i>Period</i>	<i>Obligations</i>		
06/01/81-08/31/84	FY83: \$48,567	TOTAL: \$142,726	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Carlson, T. N.	GSFC/Schmugge, T. J.	39-Env Sci, NEC	
	GSFC/Rango, A.		
<b>NAG 5-201      Pennsylvania State Univ. - Univ. Park    4299</b>			
Wind-wind interactions in selective binaries			
<i>Period</i>	<i>Obligations</i>		
09/01/81-08/31/82	FY83:	TOTAL: \$8,190	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ramsey, L.	GSFC/Boggeess, A.	11-Astronomy	
<b>NAG 5-214      Pennsylvania State Univ. - Univ. Park    4300</b>			
Observations of the ultraviolet spectra of carbon white dwarfs			
<i>Period</i>	<i>Obligations</i>		
11/01/81-10/31/82	FY83:	TOTAL: \$9,500	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wegner, G. A.	GSFC/Boggeess, A.	11-Astronomy	
<b>NAG 5-303      Pennsylvania State Univ. - Univ. Park    4301</b>			
Atmospheric collisional broadening motional narrowing and shifting			
<i>Period</i>	<i>Obligations</i>		
03/15/83-12/14/83	FY83: \$18,401	TOTAL: \$18,401	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Herman, R. M.	GSFC/Susskind, J.	31-Atmos Sci	
<b>NAG 5-334      Pennsylvania State Univ. - Univ. Park    4302</b>			
Two-dimensional observations of selected stars			
<i>Period</i>	<i>Obligations</i>		
07/01/83-01/31/84	FY83: \$5,000	TOTAL: \$5,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Weedman, D. W.	GSFC/Kondo, Y.	11-Astronomy	
<b>NAG 5-335      Pennsylvania State Univ. - Univ. Park    4303</b>			
Blue soft X-ray candidates: Newly discovered active binary stars			
<i>Period</i>	<i>Obligations</i>		
07/01/83-11/30/83	FY83: \$8,700	TOTAL: \$8,700	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Nousek, J. A.	GSFC/Kondo, Y.	11-Astronomy	
<b>NAG 5-361      Pennsylvania State Univ. - Univ. Park    4304</b>			
Photometry of diffuse sources with wide-field cameras			
<i>Period</i>	<i>Obligations</i>		
08/15/83-08/14/84	FY83: \$19,994	TOTAL: \$19,994	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Usher, P. D.	GSFC/Klinglesmith, D. A.	11-Astronomy	
	GSFC/Niedner, M. B.		
<b>NAG 5-606      Pennsylvania State Univ. - Univ. Park    4305</b>			
Stratospheric studies by satellite, rocket and balloon observations			
<i>Period</i>	<i>Obligations</i>		
05/15/82-07/14/84	FY83: \$33,000	TOTAL: \$67,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Olivero, J. J.	GSFC/Schmidlin, F. J.	31-Atmos Sci	
<b>NAG 6-7      Pennsylvania State Univ. - Univ. Park    4306</b>			
Investigate the influence of auroral energetic and electrodynamic coupling on middle atmosphere parameters			
<i>Period</i>	<i>Obligations</i>		
09/01/80-12/31/83	FY83: \$20,000	TOTAL: \$206,460	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mitchell, J. D.	GSFC/Early, L. J.	19-Phys Sci, NEC	
Maynard, N. C.	GSFC/Pless, R. H.		
Goldberg, R. A.			
<b>NAG 8-434      Pennsylvania State Univ. - Univ. Park    4307</b>			
HRI positioning of X-ray sources h1515+09			
<i>Period</i>	<i>Obligations</i>		
05/24/82-05/23/83	FY83:	TOTAL: \$2,400	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Garmire, G. P.	MSFC/Stone, J. F.	11-Astronomy	
Nousek, J. A.			





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## **NAS 8-34535 Pennsylvania State Univ. - Univ. Park 4322** Study of pump cavitation damage

Period	Obligations
09/28/81-09/30/83	FY83: \$50,000 TOTAL: \$175,000
Prin. Invest.	NASA Tech. Officer
Billet, M. L.	MSFC/Wilmer, G., Jr. CASE Category
	MSFC/Gross, L. A. 46-Mech Engr

## **NAS 9-15566 Pennsylvania State Univ. - Univ. Park 4323** Purification and cultivation of human pituitary growth hormone secreting cells

Period	Obligations
05/01/78-12/01/83	FY83: \$48,000 TOTAL: \$313,000
Prin. Invest.	NASA Tech. Officer
Hymer, W. C.	JSC/Morrison, D. R. CASE Category
	56-Medical Sciences

## **NAS 9-15584 Pennsylvania State Univ. - Univ. Park 4324** Kidney cell electrophoresis

Period	Obligations
09/01/81-03/01/84	FY83: \$65,000 TOTAL: \$349,779
Prin. Invest.	NASA Tech. Officer
Todd, P. W.	JSC/Morrison, D. CASE Category
	51-Biological Sci

## **NCA 2-589001 Pennsylvania State Univ. - Univ. Park 4325** Modeling of African dust

Period	Obligations
09/01/80-08/31/82	FY83: TOTAL: \$39,849
Prin. Invest.	NASA Tech. Officer
Carlson, T. N.	ARC/Toon, O. B. CASE Category
Seaman, N.	32-Geological Sci

## **NCA 2-589101 Pennsylvania State Univ. - Univ. Park 4326** Physiological studies of two growth hormone secreting cell types and characterization of their secretions

Period	Obligations
05/01/81-04/30/83	FY83: TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer
Hymer, W.	ARC/Grindeland, R. CASE Category
	51-Biological Sci

## **NCA 2-589201 Pennsylvania State Univ. - Univ. Park 4327** Modeling of dust, gas and the meteorology over the North Atlantic and Africa

Period	Obligations
09/01/82-08/31/84	FY83: \$30,000 TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer
Carlson, T. N.	ARC/Toon, O. B. CASE Category
	31-Atmos Sci

## **NCA 2-589301 Pennsylvania State Univ. - Univ. Park 4328** Understanding the influence of initial conditions, boundary conditions, topography, and irreversible processes on the intensity and mass transfer of tropopause folding events

Period	Obligations
06/15/83-06/14/85	FY83: \$10,000 TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer
Warner, T. T.	ARC/Pfister, L. CASE Category
	ARC/Danielsen, E. F. 31-Atmos Sci

## **NCC 3-9 Pennsylvania State Univ. - Univ. Park 4329** Interdisciplinary collaboration on tribology

Period	Obligations
05/19/80-09/28/83	FY83: TOTAL: \$124,601
Prin. Invest.	NASA Tech. Officer
Klaus, E. E.	LERC/Loomis, W. R. CASE Category
Nagarajan, R.	LERC/Wedeven, L. D. 46-Mech Engr

## **NGL 39-009-003 Pennsylvania State Univ. - Univ. Park 4330** Research on electron densities in upper ionosphere, including studies of rocket and separating capsule experimental techniques

Period	Obligations
03/01/61-10/30/83	FY83: \$120,000 TOTAL: \$2,770,035
Prin. Invest.	NASA Tech. Officer
Nisbet, J. S.	HQ-EE/Lynch, J. T. CASE Category
	HQ-EE/Schmerling, E. R. 13-Physics

## **NGT 39-009-800 Pennsylvania State Univ. - Univ. Park 4331** Graduate student researchers program

Period	Obligations
09/01/80-05/31/83	FY83: TOTAL: \$34,200
Prin. Invest.	NASA Tech. Officer
Nisbet, J. S.	HQ-LB/Carter, C. H. CASE Category
	13-Physics

## **NGT 39-009-801 Pennsylvania State Univ. - Univ. Park 4332** Graduate student researchers program

Period	Obligations
09/01/80-02/28/84	FY83: TOTAL: \$37,000
Prin. Invest.	NASA Tech. Officer
Carlson, T. N.	HQ-LB/Owens, F. C. CASE Category
	19-Phys Sci, NEC

## **NGT 39-009-802 Pennsylvania State Univ. - Univ. Park 4333** Training program in computational fluid dynamics

Period	Obligations
01/01/81-12/31/83	FY83: \$105,000 TOTAL: \$280,000
Prin. Invest.	NASA Tech. Officer
Lakshminarayana, B.	HQ-RT/Graves, R. A., Jr. CASE Category
	41-Aero Engr

## **NGT 39-009-803 Pennsylvania State Univ. - Univ. Park 4334** Graduate student researchers program

Period	Obligations
09/01/81-08/31/84	FY83: \$15,000 TOTAL: \$40,350
Prin. Invest.	NASA Tech. Officer
Alexander, S. S.	HQ-LB/Owens, F. C. CASE Category
	32-Geological Sci

## **NGT 39-009-804 Pennsylvania State Univ. - Univ. Park 4335** Graduate student researchers program

Period	Obligations
09/01/82-08/31/84	FY83: \$14,000 TOTAL: \$27,000
Prin. Invest.	NASA Tech. Officer
Usher, P. D.	HQ-LB/Owens, F. C. CASE Category
	13-Physics

## **NGT 39-009-805 Pennsylvania State Univ. - Univ. Park 4336** Graduate student researchers program

Period	Obligations
09/01/82-08/31/84	FY83: \$14,850 TOTAL: \$26,790
Prin. Invest.	NASA Tech. Officer
Alexander, S. S.	HQ-LB/Owens, F. C. CASE Category
	32-Geological Sci

**NASA'S UNIVERSITY PROGRAM**  
**PENNSYLVANIA (Continued)**

**NGT 39-009-806 Pennsylvania State Univ. - Univ. Park 4337**  
 NASA graduate student researchers program  

<i>Period</i>	<i>Obligations</i>	
07/01/83-06/30/84	FY83: \$15,000	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Peterson, G. W.	HQ-LB/Owens, F. C.	32-Geological Sci

**NGT 39-009-807 Pennsylvania State Univ. - Univ. Park 4338**  
 NASA graduate student researchers program  

<i>Period</i>	<i>Obligations</i>	
06/01/83-05/31/84	FY83: \$13,000	TOTAL: \$13,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nisbet, J. S.	HQ-LB/Owens, F. C.	45-Elec Engr

**NSG 1580 Pennsylvania State Univ. - Univ. Park 4339**  
 Broadbank jet noise amplification by a pure tone excitation  

<i>Period</i>	<i>Obligations</i>	
12/01/78-05/31/82	FY83:	TOTAL: \$115,458
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Morris, P. J.	LARC/Gatski, T. B.	41-Aero Engr
	LARC/Hardin, J. C.	

**NSG 3012 Pennsylvania State Univ. - Univ. Park 4340**  
 Compressor or fan rotor wake characteristics  

<i>Period</i>	<i>Obligations</i>	
06/28/74-03/25/83	FY83:	TOTAL: \$308,510
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lakshminarayana, B.	LERC/Shaw, L. M.	41-Aero Engr

**NSG 3212 Pennsylvania State Univ. - Univ. Park 4341**  
 End wall flows in rotors and stators of a single stage compressor  

<i>Period</i>	<i>Obligations</i>	
08/01/78-11/18/83	FY83: \$73,311	TOTAL: \$339,706
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lakshminarayana, B.	LERC/Sockol, P. M.	41-Aero Engr

**NSG 3264 Pennsylvania State Univ. - Univ. Park 4342**  
 The boundary layer on compressor cascade blades  

<i>Period</i>	<i>Obligations</i>	
06/04/79-11/27/83	FY83: \$84,891	TOTAL: \$316,023
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Deutsch, S.	LERC/Sanger, N. L.	41-Aero Engr
Henderson, R.		

**NSG 3265 Pennsylvania State Univ. - Univ. Park 4343**  
 The large scale structure of turbulence in a rotor wake  

<i>Period</i>	<i>Obligations</i>	
07/01/79-01/26/84	FY83: \$46,531	TOTAL: \$199,161
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Morris, P. J.	LERC/Strazisar, A. J.	41-Aero Engr

**NSG 3266 Pennsylvania State Univ. - Univ. Park 4344**  
 Three dimensional flow field inside compressor rotor passages, including blade boundary layers  

<i>Period</i>	<i>Obligations</i>	
06/26/79-10/18/83	FY83: \$76,903	TOTAL: \$304,552
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lakshminarayana, B.	LERC/Sockol, P. M.	41-Aero Engr

**NSG 3301 Pennsylvania State Univ. - Univ. Park 4345**  
 Mass analysis of neutral particles and ions released during electrical breakdowns on spacecraft surfaces  

<i>Period</i>	<i>Obligations</i>	
09/04/79-12/01/83	FY83: \$99,723	TOTAL: \$324,909
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kendall, B. R.	LERC/Staskus, J. V.	13-Physics
	LERC/Stevens, N. J.	

**NSG 5205 Pennsylvania State Univ. - Univ. Park 4346**  
 Utilization of satellite data in mesoscale models  

<i>Period</i>	<i>Obligations</i>	
09/01/77-12/31/83	FY83: \$98,000	TOTAL: \$323,930
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Warner, T.	GSFC/Uccellini, L. W.	31-Atmos Sci

**NSG 5212 Pennsylvania State Univ. - Univ. Park 4347**  
 Study of high latitude thermospheric densities and flow patterns  

<i>Period</i>	<i>Obligations</i>	
10/01/77-07/31/83	FY83:	TOTAL: \$77,012
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nisbet, J. S.	GSFC/Spencer, N. W.	13-Physics
Bleuler, E.		

**NSG 6004 Pennsylvania State Univ. - Univ. Park 4348**  
 Studies of mesospheric ionization  

<i>Period</i>	<i>Obligations</i>	
10/01/75-09/30/83	FY83: \$104,000	TOTAL: \$482,664
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hale, L. C.	GSFC/Early, L. J.	19-Phys Sci, NEC
	GSFC/Pless, R. H.	

**NAGW 242 Temple University 4349**  
 The influence of varied gravito-inertial fields on the cardiac response of orb-weaving spiders  

<i>Period</i>	<i>Obligations</i>	
09/01/81-10/31/83	FY83:	TOTAL: \$26,130
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Finck, A.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NAS 9-14979 Temple University 4350**  
 Ultraviolet-radiation induced skin cancer in experimental animals  

<i>Period</i>	<i>Obligations</i>	
04/26/76-12/31/81	FY83:	TOTAL: \$349,993
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Urback, F.	JSC/Nachtwey, D. S.	56-Medical Sciences

**NAG 3-435 University of Pennsylvania 4351**  
 Intercalated graphite fibers: Chemical aspects related to composite applications  

<i>Period</i>	<i>Obligations</i>	
07/01/83-06/30/84	FY83: \$50,028	TOTAL: \$50,028
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Forsman, W. C.	LERC/Banks, B. A.	12-Chemistry

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<b>NAS 5-27285</b>	<b>University of Pennsylvania</b>	<b>4352</b>
Study of the fabrication and characterization of deep diode arrays		
<i>Period</i>	<i>Obligations</i>	
06/21/82-08/21/83	FY83:	TOTAL: \$51,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zemel, J. N.	GSFC/Alcorn, G. E.	45-Elec Engr

<b>NAG 2-53</b>	<b>University of Pittsburgh</b>	<b>4359</b>
A survey of nearby stars for the perturbative effects of extrasolar planetary systems		
<i>Period</i>	<i>Obligations</i>	
09/01/80-11/30/83	FY83: \$53,600	TOTAL: \$184,995
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gatewood, G. D.	ARC/Black, D. C.	11-Astronomy
	ARC/Rathjen, S.	

<b>NAS 5-27353</b>	<b>University of Pennsylvania</b>	<b>4353</b>
Satellite-borne array study for data collection platforms		
<i>Period</i>	<i>Obligations</i>	
09/13/82-09/12/83	FY83:	TOTAL: \$62,978
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Haber, F.	GSFC/Turkiewica, J. M.	
		33-Oceanography

<b>NAG 2-155</b>	<b>University of Pittsburgh</b>	<b>4360</b>
Physiology of cat vestibular system efferent neurons		
<i>Period</i>	<i>Obligations</i>	
01/15/82-01/14/84	FY83:	TOTAL: \$90,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tomko, D. L.	ARC/Dauntton, N. G.	51-Biological Sci
	ARC/Suri, K.	

<b>NAS 9-15531</b>	<b>University of Pennsylvania</b>	<b>4354</b>
Development phase for Spacelab experiment		
<i>Period</i>	<i>Obligations</i>	
03/01/78-01/01/84	FY83: \$56,773	TOTAL: \$705,252
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, A. H.	JSC/Peck, E. E.	51-Biological Sci

<b>NAG 3-44</b>	<b>University of Pittsburgh</b>	<b>4361</b>
Investigation into the role of NAC dependency on oxide and metal substrates in the initiation of hot corrosion		
<i>Period</i>	<i>Obligations</i>	
04/01/80-08/31/83	FY83:	TOTAL: \$59,970
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Birks, N.	LERC/Kohl, F. J.	47-Materials Engr
	LERC/Fielder, W. L.	

<b>NAS 9-16031</b>	<b>University of Pennsylvania</b>	<b>4355</b>
Life sci flt exper protein metabolism		
<i>Period</i>	<i>Obligations</i>	
01/17/80-12/31/82	FY83:	TOTAL: \$26,847
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stein, T. D.	JSC/McCollum, G.	59-Life Sci. NEC

NAG 5-249		University of Pittsburgh	4362
Observations of edge on seyferts			
Period		Obligations	
08/01/82-07/31/84	FY83: \$8,800	TOTAL: \$11,671	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Turnshek, D. A.	GSFC/Kondo, Y.	11-Astronomy	
Hazard, C.			

NAS 9-16634		University of Pennsylvania	4356
Software additions/modifications for OSDS man model development			
Period	Obligations		
06/01/82-12/01/84	FY83: \$196,000	TOTAL: \$391,384	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Badler, N. I.	JSC/Woolford, B. J.	42-Astro Engr	

<b>NAG 5-609</b>	<b>University of Pittsburgh</b>	<b>4363</b>
Sounding rocket study of N2O, NO, and other trace constituents in the upper stratosphere and mesosphere		
<i>Period</i>	<i>Obligations</i>	
07/01/82-04/30/84	FY83: \$150,358	TOTAL: \$193,180
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zipf, E. C.	GSFC/Early, L. J.	13-Physics
Erdman, P. W.	GSFC/Pless, R. H.	

<b>NAS 9-17003</b>	<b>University of Pennsylvania</b>	<b>4357</b>
Laser anthropometric measurement system algorithm development		
<i>Period</i>	<i>Obligations</i>	
09/01/83-09/31/84	FY83: \$60,000	TOTAL: \$60,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Altschuler, M. D.	JSC/Woolford, B. J.	
	29-Math/Computer.NEC	

<b>NAG 6-2</b>	<b>University of Pittsburgh</b>	<b>4364</b>
Studies of the physics and chemistry of the terrestrial atmosphere		
<i>Period</i>	<i>Obligations</i>	
10/01/79-12/31/83	FY83: \$146,823	TOTAL: \$620,731
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zipt, E. C.	GSFC/Early, L. J.	19-Phys Sci, NEC
	WFC/Pless, R. H.	

<b>NGR 39-010-149</b>	<b>University of Pennsylvania</b>	<b>4358</b>
Plant morphogenesis under conditions of hypo and hypergravia		
<i>Period</i>	<i>Obligations</i>	
09/01/73-03/31/84	FY83: \$41,290	TOTAL: \$516,224
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, A. H.	HQ-EB/Halstead, T. W.	51-Biological Sci

<b>NAS 3-22662</b>	<b>University of Pittsburgh</b>	<b>4365</b>
Presentation of symposia and reports in advanced electrical propulsion		
<i>Period</i>	<i>Obligations</i>	
09/23/80-09/24/83	FY83:	TOTAL: \$130,846
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McWilliams, P. A.	LERC/Kerslake, W. R.	42-Astro Engr

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<b>NAS 5-25013</b>	<b>University of Pittsburgh</b>	<b>4366</b>
Study of infrared detection by intracavity upconversion		
<i>Period</i>	<i>Obligations</i>	
05/09/78-01/01/84	FY83: \$6,578	TOTAL: \$228,440
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Falk, J.	GSFC/Kostiuk, T.	13-Physics
	GSFC/Ogilvie, K. W.	

<b>NGR 39-011-161</b>	<b>University of Pittsburgh</b>	<b>4373</b>
Laboratory studies of kinetics of tropospheric and stratospheric aircraft pollutant reactions using atomic and molecular resonance fluorescence detection		
<i>Period</i>	<i>Obligations</i>	
06/03/73-02/28/84	FY83: \$101,179	TOTAL: \$639,072
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kaufman, E.	HQ-EE-Watson, R. T.	12-Chemistry

<b>NASW 3403</b>	<b>University of Pittsburgh</b>	<b>4367</b>
Operation of a NASA Industrial Application Center (IAC)		
<i>Period</i>	<i>Obligations</i>	
04/01/80-03/31/83	FY83:	TOTAL: \$831,573
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McWilliams, P. A.	HQ-LG/Bivins, R. G.	
	HQ-LG/Ault, L. A.	22-Computer Science

<b>NSG 5270</b>	<b>University of Pittsburgh</b>	<b>4374</b>
Lithological characterization of crystalline basement rock provinces in the United States		
<i>Period</i>		<i>Obligations</i>
04/15/78-01/14/83	FY83:	TOTAL: \$64,756
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lidiak, E. G.	GSFC/Kouns, C. W.	32-Geological Sci

<b>NASW 3571</b>	<b>University of Pittsburgh</b>	<b>4368</b>
Study various concepts for the development of a manned space station		
<i>Period</i>	<i>Obligations</i>	
11/13/81-07/12/82	FY83:	TOTAL: \$23,385
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fletcher, J. C.	HQ-AD/Culbertson, P. E.	41-Aero Engr
	HQ-LG/Finn, T. T.	

<b>NSG 7147</b>	<b>University of Pittsburgh</b>	<b>4375</b>
Photometric analyses of Mariner 10 images of Venus and Mercury		
<i>Period</i>	<i>Obligations</i>	
06/23/75-11/30/83	FY83:	TOTAL: \$206,122
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hapke, B.	HQ-EL/Boyce, J. M.	11-Astronomy
	HQ-EL/Holt, H. E.	

<b>NCA 2-592901</b>	<b>University of Pittsburgh</b>	<b>4369</b>
Vestibular nuclei neuron activity in freely moving cats		
<i>Period</i>	<i>Obligations</i>	
03/01/79-03/31/82	FY83:	TOTAL: \$35,607
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tomko, D. L.	ARC/Dauntton, N. G.	51-Biological Sci

<b>NSG 7631</b>	<b>University of Pittsburgh</b>	<b>4376</b>
Measurement of reflectivities of rocks, minerals and glasses in the vacuum ultraviolet		
<i>Period</i>	<i>Obligations</i>	
06/01/79-09/30/83	FY83:	TOTAL: \$116,480
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hapke, B.	HQ-EL/Quaide, W. L.	32-Geological Sci

<b>NGL 39-011-013</b>	<b>University of Pittsburgh</b>	<b>4370</b>
Investigation of airglow excitation mechanisms using atomic beam techniques		
<i>Period</i>	<i>Obligations</i>	
04/26/65-12/31/82	FY83:	TOTAL: \$781,370
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
File, W. L.	HQ-EL/Brinton, H. C.	31-Atmos Sci

<b>NAG 5-205</b>	<b>Villanova University</b>	<b>4377</b>
Ultraviolet studies of nova-like variables		
<i>Period</i>	<i>Obligations</i>	
10/01/81-09/30/82	FY83:	TOTAL: \$12,694
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Guinan, E. F.	GSFC/Boggess, A.	11-Astronomy

<b>NGL 39-011-030</b>	<b>University of Pittsburgh</b>	<b>4371</b>
Studies of excitation and collision deactivation of measurable A3 state of nitrogen in the aurora and day airglow		
<i>Period</i>	<i>Obligations</i>	
05/07/65-05/31/84	FY83: \$75,000	TOTAL: \$1,304,886
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zipf, E. C.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

<b>NAG 5-260</b>	<b>Villanova University</b>	<b>4378</b>
High resolution ultraviolet studies of hot helium-rich white dwarfs		
<i>Period</i>	<i>Obligations</i>	
08/01/82-10/31/83	FY83:	TOTAL: \$11,600
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sion, E. M.	GSFC/Kondo, Y.	11-Astronomy
Guinan, E. F.		
Liebert, J.		

<b>NGR 39-011-137</b>		<b>University of Pittsburgh</b>	<b>4372</b>
Dissociative recombination coefficients for planetary ionospheric ions			
<i>Period</i>	<i>Obligations</i>		
07/28/71-05/31/84	FY83: \$44,000	TOTAL: \$436,558	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Biondi, M. A.	HQ-EZ/Stenal, R. E.	11-Astronomy	
	HQ-EZ/Weiler, E. J.		

<b>NAG 5-343</b>	<b>Villanova University</b>	<b>4379</b>
Ultraviolet observations relative to astronomical sources		
<i>Period</i>	<i>Obligations</i>	
07/15/83-02/14/84	FY83: \$24,900	TOTAL: \$24,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sion, E. M.	GSFC/Kondo, Y.	11-Astronomy
Guinan, E. F.		

# **NASA'S UNIVERSITY PROGRAM** **PENNSYLVANIA (Continued)**

**NAS 1-16095 Villanova University 4380**  
Gust response of wide-bodied jet aircraft including autopilot studies  
*Period* 01/29/80-10/14/81 *Obligations* FY83: TOTAL: \$35,105  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Goldberg, J. H. LARC/Crabill, N. L. 41-Aero Engr  
LARC/Houbolt, J. C.

**NAS 6-3096 West Chester State College 4381**  
Waterborne organic matter analysis  
*Period* 04/18/80-12/17/81 *Obligations* FY83: TOTAL: \$4,909  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Yungel, J. GSFC/Hoge, F. E. 33-Oceanography  
Ugeh, F. WFC/McGoogan, J. T.

## **RHODE ISLAND**

**NAG 1-258 Brown University 4382**  
Parameter estimation techniques for distributed systems  
*Period* 06/01/82-05/31/84 *Obligations* FY83: \$82,282 TOTAL: \$163,027  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Banks, H. T. LARC/Armstrong, E. S. 21-Mathematics  
LARC/Taylor, L. W., Jr.

**NAG 1-379 Brown University 4383**  
Studies in turbulent eddy structures relevant to jet noise  
*Period* 07/01/83-06/30/84 *Obligations* FY83: \$51,500 TOTAL: \$51,500  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Liu, J. T. LARC/Norum, T. D. 13-Physics

**NAGW 28 Brown University 4384**  
Remote sensing information applied to geological studies of planets  
*Period* 02/14/80-03/14/84 *Obligations* FY83: \$90,000 TOTAL: \$398,691  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Pieters, C. M. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 137 Brown University 4385**  
Geologic processes on the Galilean satellites: Impace cratering, volcanism and tectonism volcanism and tectonism  
*Period* 03/01/81-03/31/84 *Obligations* FY83: \$85,000 TOTAL: \$246,997  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Head, J. W. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAGW 454 Brown University 4386**  
Surface reactions on Venus  
*Period* 04/15/83-04/14/84 *Obligations* FY83: \$90,000 TOTAL: \$90,000  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Grieve, R. A. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NAS 5-26138 Brown University 4387**  
Electromagnetic deep-probing of the Earth's interior from artificial satellites: Constraints on the regional emplacement of crustal resources  
*Period* 06/05/80-02/05/83 *Obligations* FY83: TOTAL: \$99,500  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Hermance, J. F. GSFC/Oseroff, H. 31-Atmos Sci

**NAS 5-26729 Brown University 4388**  
Utilization of heat capacity mapping mission (HCMM) thermal data for the discrimination of volcanic and Eolian geological units  
*Period* 09/21/81-01/31/84 *Obligations* FY83: TOTAL: \$65,000  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Head, J. W. GSFC/Broderick, J. C. 32-Geological Sci  
Mouginis-mark, P.

**NASW 3508 Brown University 4389**  
Support Brown University regional planetary data center  
*Period* 04/14/81-10/31/83 *Obligations* FY83: \$19,887 TOTAL: \$50,687  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Head, J. W. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NGR 40-002-088 Brown University 4390**  
Analysis of Martian geologic features of Earth analogs  
*Period* 10/20/69-11/30/83 *Obligations* FY83: \$145,000 TOTAL: \$1,067,336  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Head, J. W. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NGR 40-002-116 Brown University 4391**  
Lunar basins processes and structure  
*Period* 02/20/73-02/28/84 *Obligations* FY83: \$95,000 TOTAL: \$856,839  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Head, J. W. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NGT 40-002-800 Brown University 4392**  
Graduate student researchers program  
*Period* 09/01/80-01/31/83 *Obligations* FY83: TOTAL: \$28,575  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Doepfner, T. W., Jr. HQ-LB/Carter, C. H. 41-Aero Engr

**NSG 1617 Brown University 4393**  
Analytical and numerical gas dynamics  
*Period* 06/01/79-12/31/83 *Obligations* FY83: \$19,800 TOTAL: \$182,531  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Sirovich, L. LARC/Townsend, J. C. 41-Aero Engr

# **NASA'S UNIVERSITY PROGRAM** **RHODE ISLAND (Continued)**

**NSG 7569** **Brown University** **4394**  
 Analysis of rocks and substrate as revealed in Viking Lander images  
*Period* *Obligations*  
 04/01/79-01/31/84 FY83: \$36,275 TOTAL: \$294,975  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Head, J. W. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NSG 7570** **Brown University** **4395**  
 Surface processes on Mars and its satellites with emphasis on cratering, volcanism and the evolution of Valles Marineris  
*Period* *Obligations*  
 04/01/79-01/31/84 FY83: \$45,000 TOTAL: \$321,387  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Head, J. W. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NSG 7589** **Brown University** **4396**  
 Experimental investigation of basalt-C-O-H-S gas equilibria and fumarolic alteration on Mars  
*Period* *Obligations*  
 03/01/79-12/31/83 FY83: \$50,000 TOTAL: \$201,759  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Rutherford, M. J. HQ-EL/Quaide, W. L. 32-Geological Sci  
 HQ-EL/French, B. M.

**NSG 7605** **Brown University** **4397**  
 Endogenic processes affect in the surfaces of Ganymede and Callisto  
*Period* *Obligations*  
 05/01/79-04/30/84 FY83: \$43,641 TOTAL: \$208,807  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Parmentier, E. M. HQ-EL/Quaide, W. L. 32-Geological Sci  
 HQ-EL/French, B. M.

**NAG 1-173** **University of Rhode Island** **4398**  
 Development of robots and applications to industrial processes  
*Period* *Obligations*  
 06/01/81-05/31/84 FY83: \$25,000 TOTAL: \$75,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Dally, J. W. LARC/Meintel, A. J. 49-Engr, NEC  
 Palm, W. LARC/Woolley, C. T.  
 Birk, J.

**NAGW 206** **University of Rhode Island** **4399**  
 The Archaean environment: Stable isotope studies on Archaean stromatolites  
*Period* *Obligations*  
 06/01/81-09/30/83 FY83: TOTAL: \$42,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Abell, P. I. HQ-EB/Devincenzi, D. L. 32-Geological Sci

**NAS 5-27559** **University of Rhode Island** **4400**  
 Application remote sensing to the management of Rhode Island coastal and land resources  
*Period* *Obligations*  
 02/23/83-02/22/84 FY83: \$18,500 TOTAL: \$18,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 West, N. GSFC/Blodget, H. W. 39-Env Sci, NEC  
 Richardson, K. A. GSFC/Kerber, A. G.

**NSG 7414** **University of Rhode Island** **4401**  
 Paleoflow processes and formation of Martian channels  
*Period* *Obligations*  
 10/01/77-12/31/83 FY83: \$14,931 TOTAL: \$105,451  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Boothroyd, J. C. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

## **SOUTH CAROLINA**

**NAG 5-218** **Citadel Military College of S C** **4402**  
 Abundances of the elements in sharp-lined normal late B-type stars  
*Period* *Obligations*  
 03/01/82-07/31/84 FY83: \$10,000 TOTAL: \$16,800  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Adelman, S. J. GSFC/Bogges, A. 11-Astronomy

**NAG 1-316** **Clemson University - Clemson** **4403**  
 An investigation of the accuracy of finite difference methods on the solution of linear elasticity problems  
*Period* *Obligations*  
 01/01/83-12/31/83 FY83: \$34,707 TOTAL: \$34,707  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Goree, J. G. LARC/Whitcomb, J. D. 46-Mech Engr  
 Bauld, N. R., Jr. LARC/O'brien, T. K.

**NAG 5-232** **Clemson University - Clemson** **4404**  
 Critical review of remote methods for the precision measurement of rainfall parameters  
*Period* *Obligations*  
 06/01/82-11/30/83 FY83: \$22,230 TOTAL: \$39,260  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Ulbrich, C. W. GSFC/Thiele, O. W. 31-Atmos Sci

**NAG 5-238** **Clemson University - Clemson** **4405**  
 Origins of the strong ultraviolet absorption feature surrounding selected pulsational variable stars  
*Period* *Obligations*  
 06/01/82-05/31/83 FY83: \$4,983 TOTAL: \$4,983  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Baird, S. R. GSFC/Kondo, Y. 11-Astronomy  
 Cardelli, J. A.

**NAGW 441** **Clemson University - Clemson** **4406**  
 Ager of extragalactic intermediate age star clusters  
*Period* *Obligations*  
 05/15/83-05/14/84 FY83: \$26,069 TOTAL: \$26,069  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Flower, P. L. HQ-EZ/Stencel, R. 11-Astronomy

**NAS 8-33524** **Clemson University - Clemson** **4407**  
 Hot tensile tests of Inconel 718 microfissuring of EB welds in Inconel 718  
*Period* *Obligations*  
 02/29/80-12/31/81 FY83: TOTAL: \$13,638  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Thompson, R. G. MSFC/Nunes, A. C. 47-Materials Engr  
 MSFC/Strong, J. S.

**NASA'S UNIVERSITY PROGRAM  
SOUTH CAROLINA (Continued)**

**NCC 5-27** **Clemson University - Clemson** **4408**  
Monitoring and predicting tropical cyclone formation  
*Period* *Obligations*  
03/01/83-02/29/84 FY83: \$35,000 TOTAL: \$35,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gentry, R. C. GSFC/Adler, R. F. 31-Atmos Sci  
GSFC/Simpson, J. M.

**NGT 41-001-800** **Clemson University - Clemson** **4409**  
NASA graduate student researchers program  
*Period* *Obligations*  
04/01/83-03/31/84 FY83: \$14,750 TOTAL: \$14,750  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Isgell, J. T. HQ-LB/Owens, F. C. 13-Physics

**NSG 1297** **Clemson University - Clemson** **4410**  
Crack growth in bonded isotropic and orthotropic elastic half-planes  
*Period* *Obligations*  
04/01/76-10/15/83 FY83: \$60,293 TOTAL: \$335,591  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goree, J. G. LARC/Poe, C. C., Jr. 46-Mech Engr  
LARC/Kennedy, J. M.

**NSG 1411** **Clemson University - Clemson** **4411**  
Optimization of fiber reinforced structures to satisfy aeroelastic requirements  
*Period* *Obligations*  
07/01/77-10/31/83 FY83: TOTAL: \$29,355  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rudisill, C. S. LARC/Doggett, R. V., Jr. 41-Aero Engr  
Bauld, N. R., Jr.

**NSG 5349** **Clemson University - Clemson** **4412**  
Forecasting tropical cyclone recurvature with upper tropospheric winds  
*Period* *Obligations*  
05/01/79-04/30/83 FY83: TOTAL: \$95,602  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gentry, R. C. GSFC/Rodgers, E. B. 31-Atmos Sci

**NAG 5-312** **Furman University** **4413**  
Determination of electron flexes from volume emission rate profiles  
*Period* *Obligations*  
05/01/83-04/30/84 FY83: \$7,993 TOTAL: \$7,993  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Porter, H. S. GSFC/Mayr, H. G. 13-Physics  
GSFC/Hartle, R. E.

**NAS 5-27304** **University of South Carolina** **4414**  
Development of remote sensing of urban/suburban phenomena procedures  
*Period* *Obligations*  
07/09/82-11/01/83 FY83: TOTAL: \$29,996  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jensen, J. R. GSFC/Toll, D. L. 55-Agriculture Sci  
GSFC/Dottavio, C. L.

**NGT 41-002-800** **University of South Carolina** **4415**  
NASA graduate student researchers program  
*Period* *Obligations*  
05/16/83-05/15/84 FY83: \$15,000 TOTAL: \$15,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Peters, W. H. HQ-LB/Owens, F. C. 47-Materials Engr

**NSG 7504** **University of South Carolina** **4416**  
Application of LANDSAT data in South Carolina  
*Period* *Obligations*  
12/01/78-11/30/84 FY83: TOTAL: \$500,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Roberson, R. E. HQ-ET/Vitale, J. A. 39-Env Sci, NEC

**SOUTH DAKOTA**

**NAG 1-307** **South Dakota School of Mines & Tech** **4417**  
Theoretical development of Monte Carlo codes for modeling cumulus cloud fields  
*Period* *Obligations*  
11/01/82-10/31/83 FY83: \$25,199 TOTAL: \$25,199  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Welch, R. M. LARC/Wielicki, B. A. 31-Atmos Sci

**NAG 9-22** **South Dakota School of Mines & Tech** **4418**  
Petrologic and stratigraphic studies of planetary regoliths  
*Period* *Obligations*  
02/01/82-01/31/84 FY83: \$130,000 TOTAL: \$242,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Papike, J. J. JSC/Dietrich, J. W. 32-Geological Sci

**NGL 42-003-007** **South Dakota State University** **4419**  
Remote sensing of soils, land forms, and land use in the Northern Great Plains in preparation for ERTS applications  
*Period* *Obligations*  
07/27/70-06/30/83 FY83: TOTAL: \$1,650,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Myers, V. I. HQ-ET/Vitale, J. A. 39-Env Sci, NEC

**NSG 5396** **South Dakota State University** **4420**  
Advanced microwave soil moisture studies  
*Period* *Obligations*  
07/01/79-05/31/83 FY83: \$7,331 TOTAL: \$223,848  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harlan, J. C. GSFC/Schmugge, T. J. 39-Env Sci, NEC  
Myers, V. I. GSFC/O'Neill, P.

# NASA'S UNIVERSITY PROGRAM TENNESSEE

## TENNESSEE

**NAG 8-10** **Fisk University** **4421**  
The influence of defects and impurities on the electrical and optical properties of pyroelectric crystals

Period	Obligations	
05/01/81-11/16/82	FY83:	TOTAL: \$53,114
Prin. Invest.	NASA Tech. Officer	CASE Category
Springer, J. M.	MSFC/Kroes, R. L.	13-Physics
	MSFC/Kent, M. I.	

**NSG 8060** **Fisk University** **4422**  
Optical characterization of zero-gravity grown crystals

Period	Obligations	
04/17/78-02/07/84	FY83: \$90,000	TOTAL: \$347,261
Prin. Invest.	NASA Tech. Officer	CASE Category
Silberman, E.	MSFC/Kroes, R. L.	13-Physics
Morgan, S. H.	MSFC/Kent, M. I.	
Springer, J. M.		

**NAS 5-23801** **Meharry Medical College** **4423**  
Investigation of medical information management system application in a complex health care facility

Period	Obligations	
12/07/76-05/04/84	FY83:	TOTAL: \$165,564
Prin. Invest.	NASA Tech. Officer	CASE Category
Braun, G.	GSFC/Alterescu, S. 56-Medical Sciences	

**NAS13-171** **Middle Tennessee State University** **4424**  
Develop and conduct remote sensing short courses and seminars

Period	Obligations	
03/12/81-03/11/84	FY83:	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Fullerton, R. O.	NSTL/Conner, P. K.	32-Geological Sci

**NAG 3-125** **Tennessee State University** **4425**  
Investigation of relationships among machinability, wear and cavitation erosion of materials

Period	Obligations	
11/03/80-11/01/82	FY83:	TOTAL: \$80,446
Prin. Invest.	NASA Tech. Officer	CASE Category
Chaudhuri, D. K.	LERC/Young, S. G.	47-Materials Engr

**NAG 3-458** **Tennessee State University** **4426**  
Undergraduate and graduate aerospace fellowship program (mine)

Period	Obligations	
08/01/83-07/31/84	FY83: \$34,000	TOTAL: \$34,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Malkani, M. J.	LERC/Allen, H., Jr.	46-Mech Engr
Isibor, E. I.		

**NAG 8-22** **Tennessee State University** **4427**  
Research support for school of engineering and technology

Period	Obligations	
08/25/83-08/24/84	FY83: \$235,632	TOTAL: \$235,632
Prin. Invest.	NASA Tech. Officer	CASE Category
Isibor, E. I.	MSFC/Randall, J. I.	41-Aero Engr
Sastry, V. S.	MSFC/Osborn, L.	
Teten Baum, S.		

**NGT 43-014-750** **Tennessee State University** **4428**  
Training of undergraduate students in sciences and engineering

Period	Obligations	
06/01/75-05/31/83	FY83:	TOTAL: \$100,750
Prin. Invest.	NASA Tech. Officer	CASE Category
Malkani, M. J.	HQ-LC/Pohly, J. G.	49-Engr, NEC

**NAG 1-303** **University of Tennessee - Knoxville** **4429**  
Investigation and development of traveling belt skin friction transducers with a potential use in cryogenic wind tunnel models for the national transonic facility

Period	Obligations	
12/15/82-12/14/83	FY83: \$60,000	TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wu, J. M.	LARC/Lawing, P. L.	41-Aero Engr
Vakili, A.	LARC/Bobbitt, P. J.	

**NAG 1-319** **University of Tennessee - Knoxville** **4430**  
Development of finite element methods for aerothermal flowfield analysis of high Mach number

Period	Obligations	
12/17/82-12/16/83	FY83: \$48,970	TOTAL: \$48,970
Prin. Invest.	NASA Tech. Officer	CASE Category
Baker, A. J.	LARC/Wieting, A. R.	49-Engr, NEC

**NAG 2-71** **University of Tennessee - Knoxville** **4431**  
Three-dimensional boundary layer flow over transonic slotted wind tunnel wall with mass transfer

Period	Obligations	
12/01/80-10/31/82	FY83:	TOTAL: \$48,144
Prin. Invest.	NASA Tech. Officer	CASE Category
Wu, J. M.	ARC/Steinle, F. W., Jr.	41-Aero Engr

**NAG 2-193** **University of Tennessee - Knoxville** **4432**  
Study of flow field on transonic adaptive wind tunnel wall with controlled segmented compartments

Period	Obligations	
10/01/82-12/31/83	FY83:	TOTAL: \$65,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wu, J. M.	ARC/Schairer, E. T.	41-Aero Engr
Collins, F. G.		

**NAG 3-18** **University of Tennessee - Knoxville** **4433**  
A coordinate mapping procedure for the computation of variable duct acoustics

Period	Obligations	
01/01/80-02/15/84	FY83: \$20,345	TOTAL: \$102,275
Prin. Invest.	NASA Tech. Officer	CASE Category
White, J. W.	LERC/Baumeister, K. J.	41-Aero Engr
	LERC/Rice, E. J.	

**NAG 3-83** **University of Tennessee - Knoxville** **4434**  
Time dependent local heat transfer coefficient variations during the ice accretion process on aircraft surfaces

Period	Obligations	
07/14/80-12/31/83	FY83:	TOTAL: \$68,972
Prin. Invest.	NASA Tech. Officer	CASE Category
Keshock, E. G.	LERC/Shaw, R. J.	41-Aero Engr



**NASA'S UNIVERSITY PROGRAM**  
**TENNESSEE (Continued)**

**NAG 3-233 University of Tennessee - Knoxville 4435**  
 Experimental investigation of secondary flows in a S-shaped circular duct  

Period	Obligations
12/15/81-12/14/82	FY83: TOTAL: \$49,968
Prin. Invest.	NASA Tech. Officer
Wu, J. M.	LERC/Hingst, W. R.
Vakili, A.	CASE Category
	41-Aero Engr

**NAG 9-62 University of Tennessee - Knoxville 4442**  
 The evolution of ancient planetary crusts  

Period	Obligations
02/01/83-01/31/84	FY83: \$60,000 TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer
Taylor, L. A.	JSC/Dietrich, J. W.
Hunter, R.	CASE Category
Shervais, J.	32-Geological Sci

**NAG 3-239 University of Tennessee - Knoxville 4436**  
 An experimental investigation of thermoacoustic convection heat transfer phenomenon in zero-gravity environment  

Period	Obligations
12/10/81-12/08/83	FY83: \$49,927 TOTAL: \$73,805
Prin. Invest.	NASA Tech. Officer
Parang, M.	LERC/Chai, A. T.
	CASE Category
	19-Phys Sci, NEC

**NAGW 125 University of Tennessee - Knoxville 4443**  
 Spectroscopy of methane for the atmospheres of the outer planets  

Period	Obligations
03/01/81-09/30/84	FY83: \$37,350 TOTAL: \$120,350
Prin. Invest.	NASA Tech. Officer
Fox, K.	HQ-EL/Brinton, H. C.
	CASE Category
	31-Atmos Sci

**NAG 3-364 University of Tennessee - Knoxville 4437**  
 An experimental investigation of secondary flows in variable area S-shaped duct  

Period	Obligations
12/14/82-12/13/83	FY83: \$75,084 TOTAL: \$75,084
Prin. Invest.	NASA Tech. Officer
Wu, J. M.	LERC/Hingst, W. R.
Vakili, A.	CASE Category
	41-Aero Engr

**NAS 3-23278 University of Tennessee - Knoxville 4444**  
 Gas flow environment and heat transfer nonrotating 30 program  

Period	Obligations
04/14/82-12/01/84	FY83: TOTAL: \$315,389
Prin. Invest.	NASA Tech. Officer
Schulz, R.	LERC/Gladden, H. J.
Harwell, K. E.	CASE Category
Wu, J. M.	41-Aero Engr

**NAG 3-370 University of Tennessee - Knoxville 4438**  
 Measurement of spray combustion processes  

Period	Obligations
12/05/82-12/09/83	FY83: \$74,894 TOTAL: \$74,894
Prin. Invest.	NASA Tech. Officer
Peters, C. E.	LERC/Mularz, E. J.
Farmer, W. M.	CASE Category
	46-Mech Engr

**NAS 5-26896 University of Tennessee - Knoxville 4445**  
 Fabrication of cooled sample chambers and high resolution infrared spectrum of propane gas  

Period	Obligations
02/23/82-08/01/83	FY83: \$10,000 TOTAL: \$23,500
Prin. Invest.	NASA Tech. Officer
Daunt, S. J.	GSFC/Maguire, V. C.
Blass, W. E.	CASE Category
	13-Physics

**NAG 3-385 University of Tennessee - Knoxville 4439**  
 Development research of soot particle generator  

Period	Obligations
12/30/82-12/29/83	FY83: \$75,000 TOTAL: \$75,000
Prin. Invest.	NASA Tech. Officer
Lewis, J. W.	LERC/Anderson, R. C.
Few, J. D.	CASE Category
	13-Physics

**NAS 8-32692 University of Tennessee - Knoxville 4446**  
 Gust gradient analysis  

Period	Obligations
07/07/78-02/02/82	FY83: TOTAL: \$346,458
Prin. Invest.	NASA Tech. Officer
Frost, W.	MSFC/Camp, D. W.
	CASE Category
	31-Atmos Sci

**NAG 3-398 University of Tennessee - Knoxville 4440**  
 Development of a multi-grid transonic potential flow code for cascades  

Period	Obligations
02/25/83-11/25/83	FY83: \$15,000 TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer
Steinhoff, J.	LERC/Chang, S. C.
	CASE Category
	41-Aero Engr

**NAS 8-33386 University of Tennessee - Knoxville 4447**  
 Theoretical analysis of baroclinic flows  

Period	Obligations
08/13/79-09/30/83	FY83: \$24,992 TOTAL: \$173,021
Prin. Invest.	NASA Tech. Officer
Antar, B. N.	MSFC/Fowles, W. W.
	CASE Category
	31-Atmos Sci

**NAG 9-58 University of Tennessee - Knoxville 4441**  
 Petrologic studies of meteorite groups  

Period	Obligations
04/01/83-03/31/84	FY83: \$27,000 TOTAL: \$27,000
Prin. Invest.	NASA Tech. Officer
McSween, H. Y.	JSC/Dietrich, J. W.
Misra, K. C.	CASE Category
	32-Geological Sci

**NAS 8-34268 University of Tennessee - Knoxville 4448**  
 Study of convection in a solidifying binary mixture at reduced gravity  

Period	Obligations
01/20/81-09/18/83	FY83: \$7,257 TOTAL: \$54,257
Prin. Invest.	NASA Tech. Officer
Antar, B. N.	MSFC/Schafer, C. F.
	CASE Category
	31-Atmos Sci

# **NASA'S UNIVERSITY PROGRAM** **TENNESSEE (Continued)**

**NAS 8-34320 University of Tennessee - Knoxville 4449**  
Hydrogen LSC waves for laser powered propulsion  
*Period* *Obligations*  
07/08/81-06/30/84 FY83: \$98,500 TOTAL: \$208,320  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Keefer, D. R. MSFC/Jones, L. W. 13-Physics  
MSFC/Richmond, B. J.

**NAS 8-34426 University of Tennessee - Knoxville 4450**  
Gravity Probe-B error modeling and analysis  
*Period* *Obligations*  
06/24/81-08/31/83 FY83: TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hung, J. C. MSFC/McMillion, J. M. 42-Astro Engr  
MSFC/Hypes, M. C.

**NAS 8-34627 University of Tennessee - Knoxville 4451**  
Research study: Low level gusts gradient program and aviation workshop effort  
*Period* *Obligations*  
11/20/81-03/31/84 FY83: TOTAL: \$155,831  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Frost, W. MSFC/Turner, R. E. 31-Atmos Sci  
MSFC/Sloan, J. C.

**NAS 8-35347 University of Tennessee - Knoxville 4452**  
Low level crusts gradient program and aviation workshop effort  
*Period* *Obligations*  
05/10/83-03/09/84 FY83: \$85,000 TOTAL: \$85,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Frost, W. MSFC/Campbell, W. 31-Atmos Sci

**NCA 2-772301 University of Tennessee - Knoxville 4453**  
The treatment of vortex sheets in compressible potential flows  
*Period* *Obligations*  
02/01/83-12/01/83 FY83: \$15,000 TOTAL: \$15,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Steinhoff, J. ARC/Leonard, A. 41-Aero Engr

**NGL 43-001-140 University of Tennessee - Knoxville 4454**  
Experimental investigations of opaque minerals and cooling history of lunar rocks  
*Period* *Obligations*  
09/01/73-01/31/84 FY83: TOTAL: \$567,357  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hunter, R. H. JSC/Dietrich, J. W. 11-Astronomy

**NGT 43-001-801 University of Tennessee - Knoxville 4455**  
Graduate student researchers program  
*Period* *Obligations*  
04/01/81-03/31/84 FY83: \$13,150 TOTAL: \$35,450  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Keefer, D. HQ-LB/Owens, F. C. 42-Astro Engr

**NGT 43-001-802 University of Tennessee - Knoxville 4456**  
Graduate student researchers program  
*Period* *Obligations*  
10/01/81-09/30/83 FY83: TOTAL: \$24,100  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Antar, B. N. HQ-LB/Carter, C. H. 49-Engr, NEC

**NGT 43-001-803 University of Tennessee - Knoxville 4457**  
Graduate student researchers program  
*Period* *Obligations*  
07/01/81-06/30/82 FY83: TOTAL: \$12,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Taylor, L. A. HQ-LB/Carter, C. H. 32-Geological Sci  
Hunter, R. H.

**NGT 43-001-804 University of Tennessee - Knoxville 4458**  
Graduate student researchers program  
*Period* *Obligations*  
04/01/82-03/31/84 FY83: \$14,950 TOTAL: \$27,900  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Antar, B. N. HQ-LB/Owens, F. C. 21-Mathematics

**NGT 43-001-805 University of Tennessee - Knoxville 4459**  
Graduate student researchers program  
*Period* *Obligations*  
06/01/82-05/31/84 FY83: \$15,000 TOTAL: \$28,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Taylor, L. A. HQ-LB/Owens, F. C. 32-Geological Sci

**NGT 43-001-806 University of Tennessee - Knoxville 4460**  
NASA graduate student researchers program  
*Period* *Obligations*  
06/01/83-05/31/84 FY83: \$15,000 TOTAL: \$15,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wu, J. M. HQ-LB/Owens, F. C. 41-Aero Engr

**NSG 1224 University of Tennessee - Knoxville 4461**  
A study of unsteady transonic flow analysis  
*Period* *Obligations*  
08/07/75-03/31/82 FY83: TOTAL: \$136,973  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kimble, K. R. LARC/Bland, S. R. 41-Aero Engr  
LARC/Yates, E. C., Jr.

**NSG 7413 University of Tennessee - Knoxville 4462**  
Petrologic studies of meteorite groups  
*Period* *Obligations*  
02/01/78-03/31/84 FY83: TOTAL: \$117,309  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McSween, H. Y. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/Boyce, J. M.

**NAS 2-11586 University of Tennessee - Memphis 4463**  
Regulation of erythropoiesis in mice during space flight  
*Period* *Obligations*  
10/01/82-03/21/84 FY83: \$48,000 TOTAL: \$48,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lange, R. D. ARC/Ferandin, J. A. 51-Biological Sci  
ARC/Sebesta, P. A.

**NAS 9-15670 University of Tennessee - Memphis 4464**  
Relative toxicity testing of spacecraft materials  
*Period* *Obligations*  
11/10/78-08/08/83 FY83: TOTAL: \$148,623  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Autian, J. JSC/Coleman, M. E. 56-Medical Sciences

**NASA'S UNIVERSITY PROGRAM**  
**TENNESSEE (Continued)**

**NAG 5-176** **Vanderbilt University** **4465**  
Chromospheric emission of selected stars: Ionization structure of expanding atmospheres  
*Period* *Obligations*  
05/01/81-06/30/84 FY83: TOTAL: \$13,574  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eaton, J. A. GSFC/Kondo, Y. 11-Astronomy

**NAGW 469** **Vanderbilt University** **4466**  
Weightlessness simulation: Physiological changes in fast and slow muscle  
*Period* *Obligations*  
07/01/83-06/30/84 FY83: \$50,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dettbarn, W. D. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAS 8-32695** **Vanderbilt University** **4467**  
Solar radiation on glasses  
*Period* *Obligations*  
06/27/78-10/31/84 FY83: \$20,250 TOTAL: \$74,049  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kinser, D. L. MSFC/Nichols, R. L. 47-Materials Engr  
MSFC/Strong, J. S.

**NAS 8-34428** **Vanderbilt University** **4468**  
Directional solidification of liquid miscibility gap systems  
*Period* *Obligations*  
07/02/81-03/31/83 FY83: TOTAL: \$38,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lichter, B. D. MSFC/Johnston, M. H. 12-Chemistry  
MSFC/Strong, J. S.

**NAS 8-34676** **Vanderbilt University** **4469**  
The microstructural analysis of Nb and Nb-Ge drop tube specimens  
*Period* *Obligations*  
10/15/81-04/30/85 FY83: \$100,621 TOTAL: \$112,009  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bayuzick, R. J. MSFC/Gardner, L. B. 47-Materials Engr  
MSFC/Williams, J. R.

**NAS 8-34963** **Vanderbilt University** **4470**  
Homogeneous glass crystallization analysis  
*Period* *Obligations*  
10/01/82-10/30/83 FY83: TOTAL: \$20,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kinser, D. L. MSFC/Ethridge, E. C. 47-Materials Engr  
MSFC/Curreri, P. A.

**NCC 1-8** **Vanderbilt University** **4471**  
Advanced solar energy conversion  
*Period* *Obligations*  
05/01/79-10/31/83 FY83: \$49,970 TOTAL: \$312,914  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lee, J. H. LARC/Jalufka, N. W. 13-Physics  
LARC/Conway, E. J.

**NGT 43-002-800** **Vanderbilt University** **4472**  
NASA graduate student researchers program  
*Period* *Obligations*  
06/01/83-05/31/84 FY83: \$15,000 TOTAL: \$15,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bayuzick, R. J. HQ-LB/Owens, F. C. 47-Materials Engr

**NSG 7463** **Vanderbilt University** **4473**  
Ground-based photometry of HR 1099 coordinated with the October 1977 Copernicus campaign  
*Period* *Obligations*  
05/01/78-05/31/84 FY83: TOTAL: \$4,193  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hall, D. HQ-EZ/Roman, N. G. 11-Astronomy  
HQ-EZ/Rosendhal, J. D.

**NSG 7543** **Vanderbilt University** **4474**  
Ground-based UBV photometry of RS Canis Venticorum binaries  
*Period* *Obligations*  
08/15/79-07/31/83 FY83: TOTAL: \$92,003  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hall, D. HQ-EZ/Weiler, E. J. 11-Astronomy  
HQ-EZ/Bogges, N. W.

**TEXAS**

**NASW 3577** **Baylor University** **4475**  
Development of a dust impact detector system  
*Period* *Obligations*  
06/01/82-09/30/86 FY83: \$16,000 TOTAL: \$44,333  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Alexander, W. M. HQ-EL/Brunk, W. E. 11-Astronomy  
HQ-EL/Brinton, H. C.

**NAGW 308** **Baylor College of Medicine** **4476**  
Regulation of hematopoiesis in the suspended rat as a model for spaceflight  
*Period* *Obligations*  
03/15/82-04/14/84 FY83: \$45,018 TOTAL: \$92,118  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dunn, C. D. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAS 2-10801** **Baylor College of Medicine** **4477**  
Regulation of erythropoiesis in mice during spaceflight  
*Period* *Obligations*  
09/05/80-09/30/81 FY83: \$41,000 TOTAL: \$87,152  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dunn, C. D. ARC/Ferandin, J. 51-Biological Sci

**NAS 9-14546** **Baylor College of Medicine** **4478**  
Etiological study of motion sickness by using subhuman primates  
*Period* *Obligations*  
05/01/75-06/30/84 FY83: \$90,581 TOTAL: \$422,978  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Banks, P. M. JSC/Hornick, J. L. 56-Medical Sciences  
Storey, L. R.  
Williamson, P. R.

**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

<b>NAS 9-14662</b>	<b>Baylor College of Medicine</b>		<b>4479</b>
	Influence of the external parameters of space flight on the regulation of blood volume		
	Period	Obligations	
06/01/75-11/30/83	FY83: \$19,618	TOTAL: \$397,561	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Alfrey, C.	JSC/Leach, C. S.	56-Medical Sciences	
<b>NAS 9-15891</b>	<b>Baylor College of Medicine</b>		<b>4480</b>
	Renal responses to water immersion		
	Period	Obligations	
06/01/79-12/31/83	FY83: \$15,665	TOTAL: \$76,647	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Suki, W. N.	JSC/Leach, C. S.	59-Life Sci, NEC	
<b>NAS 9-16040</b>	<b>Baylor College of Medicine</b>		<b>4481</b>
	Life science flight experiment		
	Period	Obligations	
01/17/80-01/31/82	FY83:	TOTAL: \$19,232	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Martin, R. R.	JSC/Thirolf, R. G.	59-Life Sci, NEC	
<b>NAS 9-16180</b>	<b>Baylor College of Medicine</b>		<b>4482</b>
	Influence of space flight on erythropoietin activity and inhibition		
	Period	Obligations	
08/01/80-02/29/84	FY83: \$47,344	TOTAL: \$151,642	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Dunn, C. D.	JSC/Leach, C. S.	56-Medical Sciences	
<b>NAS 9-16280</b>	<b>Baylor College of Medicine</b>		<b>4483</b>
	Operational virology support for microbiology lab		
	Period	Obligations	
12/01/80-11/30/83	FY83: \$26,901	TOTAL: \$80,703	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Knight, V.	JSC/Pierson, D. L.	56-Medical Sciences	
<b>NAS 9-16442</b>	<b>Baylor College of Medicine</b>		<b>4484</b>
	Bone metabolism study using free bone pedicle grafts		
	Period	Obligations	
01/08/82-01/07/84	FY83:	TOTAL: \$87,552	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Leblanc, A.	JSC/Smith, M.	56-Medical Sciences	
Spira, M.			
<b>NAS 9-16754</b>	<b>Baylor College of Medicine</b>		<b>4485</b>
	Flow cytometric analysis of peripheral blood lymphocytes		
	Period	Obligations	
09/22/82-12/22/82	FY83:	TOTAL: \$1,482	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Rich, R. R.	JSC/Taylor, G. R.	56-Medical Sciences	
<b>NAS 9-16818</b>	<b>Baylor College of Medicine</b>		<b>4486</b>
	Development of tungsten-tantalum generator		
	Period	Obligations	
11/01/82-12/31/83	FY83: \$36,000	TOTAL: \$36,000	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Leblanc, A.	JSC/Smith, M. C.	56-Medical Sciences	
<b>NAS 9-16898</b>	<b>Baylor College of Medicine</b>		<b>4487</b>
	Influence of spaceflight on erythrokinetics in men		
	Period	Obligations	
05/01/83-04/30/84	FY83: \$32,000	TOTAL: \$32,000	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Dunn, C. D.	JSC/Leach, C. S.	51-Biological Sci	
<b>NSG 9038</b>	<b>Houston Baptist University</b>		<b>4488</b>
	Obtaining high spatial resolution planetary imagery with potential shuttle era instrumentation		
	Period	Obligations	
01/01/76-04/30/82	FY83:	TOTAL: \$56,723	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Morgan, T. H.	JSC/Potter, A. E.	11-Astronomy	
<b>NAG 9-61</b>	<b>Pan American University</b>		<b>4489</b>
	Sensitivity analysis of the suits vegetation reflectance model		
	Period	Obligations	
06/01/83-08/31/84	FY83: \$36,500	TOTAL: \$36,500	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Lemaster, E. W.	JSC/Browne, I. D.	39-Env Sci, NEC	
Chance, J. E.			
<b>NSG 9033</b>	<b>Pan American University</b>		<b>4490</b>
	Experimental tests and model calculations on wheat varieties grown in India/Pakistan and in Texas		
	Period	Obligations	
08/28/75-08/31/83	FY83:	TOTAL: \$254,000	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Lemaster, E. W.	JSC/Pitts, E.	39-Env Sci, NEC	
Chance, J. E.			
<b>NAS 9-16899</b>	<b>Prairie View A&amp;M University</b>		<b>4491</b>
	Five task comprehensive research project		
	Period	Obligations	
06/13/83-05/31/85	FY83: \$414,391	TOTAL: \$414,391	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Greaux, A. E.	JSC/Kennedy, R. C.	42-Astro Engr	
<b>NCA 2-598101</b>	<b>Prairie View A&amp;M University</b>		<b>4492</b>
	Resistance-capacitance active filter design		
	Period	Obligations	
09/01/81-08/31/82	FY83:	TOTAL: \$15,254	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Fuller, J. H.	ARC/Deboo, G. J.	29-Math/Computer, NEC	
<b>NCA 2-598102</b>	<b>Prairie View A&amp;M University</b>		<b>4493</b>
	Design of fatigue tester for wind tunnel compressor blade		
	Period	Obligations	
09/01/81-12/31/82	FY83:	TOTAL: \$24,786	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Yeh, H. Y.	ARC/Matsuhiro, D. S.	29-Math/Computer, NEC	

**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

**NCA 2-598103** **Prairie View A&M University** **4494**  
Long term recording wattmeter  
*Period* *Obligations*  
09/01/81-12/31/82 FY83: TOTAL: \$27,083  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Emanuel, E. ARC/Brown, R. C., Jr.  
29-Math/Cmputer, NEC

**NCA 2-598104** **Prairie View A&M University** **4495**  
Microprocessor instrumentation system  
*Period* *Obligations*  
09/01/81-05/31/83 FY83: TOTAL: \$21,384  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Knighton, T. G. ARC/Camisa, J. T.  
29-Math/Cmputer, NEC

**NCA 2-598202** **Prairie View A&M University** **4496**  
Design of a unibus code conversion device  
*Period* *Obligations*  
01/01/82-05/31/83 FY83: TOTAL: \$26,656  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Knighton, T. G. ARC/Lakowske, S. D.  
45-Elec Engr

**NCA 2-598203** **Prairie View A&M University** **4497**  
Market survey of voice data entry systems  
*Period* *Obligations*  
01/01/82-05/31/83 FY83: TOTAL: \$15,916  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Knighton, T. G. ARC/Lakowske, S. D.  
45-Elec Engr

**NSG 9006** **Prairie View A&M University** **4498**  
Measurement of growth morphological and bi-directional scatter-  
ing parameters of wheat  
*Period* *Obligations*  
06/01/74-11/30/81 FY83: TOTAL: \$232,019  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Brans, E. A. JSC/Browne, I. D.  
39-Env Sci, NEC

**NAG 5-262** **Rice University** **4499**  
High dispersion ultraviolet spectra abundances of carbon, silicon  
and magnesium in selected galactic regions  
*Period* *Obligations*  
08/01/82-12/31/83 FY83: \$16,800 TOTAL: \$24,800  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Dufour, R. J. GSFC/Kondo, Y.  
11-Astronomy  
Shields, G. A.  
Schiffer, F. H., III

**NAG 5-302** **Rice University** **4500**  
Magnetospheric physics research using Dynamics Explorer data  
*Period* *Obligations*  
04/01/83-03/31/84 FY83: \$40,000 TOTAL: \$40,000  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Reiff, P. H. GSFC/Bullock, G. D.  
13-Physics  
GSFC/Hoffman, R. A.

**NAGW 69** **Rice University** **4501**  
Electron beam-plasma interactions in the laboratory and in the  
ionosphere  
*Period* *Obligations*  
06/01/80-05/30/84 FY83: \$52,409 TOTAL: \$229,409  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Bernstein, W. HQ-EE/Benson, R. F. 19-Phys Sci, NEC  
HQ-EZ/Schmerling, E. R.

**NAGW 166** **Rice University** **4502**  
Jupiter data analysis: A search for magnetic anomaly effects  
*Period* *Obligations*  
03/01/81-02/28/83 FY83: TOTAL: \$92,460  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Dessler, A. J. HQ-EE/Lynch, J. T.  
13-Physics  
HQ-EL/Evans, N.

**NAGW 168** **Rice University** **4503**  
Rotational and convective plasma flow in the Jovian magneto-  
sphere  
*Period* *Obligations*  
03/01/81-03/01/84 FY83: \$30,004 TOTAL: \$90,004  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Hill, T. W. HQ-EE/Lynch, J. T.  
13-Physics  
HQ-EE/Evans, N.

**NAGW 379** **Rice University** **4504**  
Theoretical study of pulsar magnetospheres  
*Period* *Obligations*  
11/01/82-10/31/84 FY83: \$84,371 TOTAL: \$84,371  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Michel, F. C. HQ-E/Rosendhal, J. D.  
11-Astronomy  
HQ-EP/Schrom, J.

**NAGW 384** **Rice University** **4505**  
Determination sizes of extragalactic HII regions  
*Period* *Obligations*  
10/15/82-04/30/84 FY83: \$43,134 TOTAL: \$43,134  
*Prin. Invest.* NASA Tech. Officer CASE Category  
O'dell, C. R. HQ-EZ/Weiler, E. J.  
11-Astronomy  
HQ-EZ/Bogges, N. W.

**NAGW 482** **Rice University** **4506**  
Three-dimensional structure of the Earth's electromagnetic field  
*Period* *Obligations*  
07/01/83-06/30/84 FY83: \$170,000 TOTAL: \$170,000  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Michel, F. C. HQ-EE/Butler, D. M.  
39-Env Sci, NEC  
HQ-EE/Birmingham, T. J.

**NAS 5-23338** **Rice University** **4507**  
Theoretical predictions and data analysis  
*Period* *Obligations*  
02/04/74-03/01/84 FY83: \$36,250 TOTAL: \$143,115  
*Prin. Invest.* NASA Tech. Officer CASE Category  
Cloutier, P. A. GSFC/Taylor, H. A., Jr.  
13-Physics  
GSFC/Gagnon, B.

# **NASA'S UNIVERSITY PROGRAM** **TEXAS (Continued)**

<b>NAS 8-33199</b>	<b>Rice University</b>		<b>4508</b>
	Measurement of high temperature properties of liquid and solid tungsten		
	<i>Period</i>	<i>Obligations</i>	
	11/27/78-03/01/85	FY83: \$75,000 TOTAL: \$188,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Margrave, J. L.	MSFC/Fallon, R. A.	47-Materials Engr	
	MSFC/Ethridge, E. C.		
<b>NAS 9-16596</b>	<b>Rice University</b>		<b>4509</b>
	Imagery and spectroscopy of supernova remnants and HII regions		
	<i>Period</i>	<i>Obligations</i>	
	05/01/82-11/01/83	FY83: TOTAL: \$15,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Dufour, R. J.	JSC/Parker, R. A.	11-Astronomy	
<b>NAS 9-16672</b>	<b>Rice University</b>		<b>4510</b>
	Design and build an electron gun port to be compatible with an 8' conflat flange on the space plasma lab vacuum chamber		
	<i>Period</i>	<i>Obligations</i>	
	06/30/82-08/01/82	FY83: TOTAL: \$5,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bernstein, W.	JSC/Konradi, A.	13-Physics	
<b>NAS 9-16732</b>	<b>Rice University</b>		<b>4511</b>
	Ionospheric research radar operation and data reduction support		
	<i>Period</i>	<i>Obligations</i>	
	09/01/82-09/30/83	FY83: TOTAL: \$20,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gordon, W. E.	JSC/Jost, J.	22-Computer Science	
<b>NAS 9-16773</b>	<b>Rice University</b>		<b>4512</b>
	Historical chronology manuscript relating to history of chronological development of space transportation system from its inception through end of orbital flight test phase		
	<i>Period</i>	<i>Obligations</i>	
	12/09/82-06/30/86	FY83: \$279,650 TOTAL: \$279,650	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Van Helden, A.	JSC/Grotberg, M.	73-History	
<b>NASW 3742</b>	<b>Rice University</b>		<b>4513</b>
	Analog magnetospheric physics simulations from a space station		
	<i>Period</i>	<i>Obligations</i>	
	03/24/83-09/01/83	FY83: \$24,258 TOTAL: \$24,258	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Michel, F. C.	HQ-MF/Holt, S. S.	13-Physics	
	HQ-MF/Pritchard, E. B.		
<b>NCC 9-10</b>	<b>Rice University</b>		<b>4514</b>
	Nonparametric and mixture for crop classification and estimation in a reactive computing environment		
	<i>Period</i>	<i>Obligations</i>	
	07/01/83-04/30/84	FY83: \$24,990 TOTAL: \$24,990	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Scott, D. W.	JSC/Browne, I. D.	29-Math/Computer, NEC	
<b>NGL 44-006-012</b>	<b>Rice University</b>		<b>4515</b>
	Laboratory development of solar wind heavy-ion mass spectrometer		
	<i>Period</i>	<i>Obligations</i>	
	06/27/84-06/30/83	FY83: TOTAL: \$1,653,736	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wolf, R. A.	HQ-EE/Lynch, J. T.	13-Physics	
	HQ-EE/Schmerling, E. R.		
<b>NGL 44-006-127</b>	<b>Rice University</b>		<b>4516</b>
	Lunar fines, their origin, evolution, and interaction with solar wind and cosmic rays		
	<i>Period</i>	<i>Obligations</i>	
	02/16/71-01/31/84	FY83: TOTAL: \$602,693	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Heymann, D.	JSC/Dietrich, J. W.	32-Geological Sci	
<b>NGR 44-006-137</b>	<b>Rice University</b>		<b>4517</b>
	Analysis of data on the magnetotail and solar wind		
	<i>Period</i>	<i>Obligations</i>	
	12/29/70-03/31/84	FY83: \$86,402 TOTAL: \$653,429	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Reiff, P. H.	HQ-EE/Lynch, J. T.	13-Physics	
	HQ-EE/Wiskercheir, M. J.		
<b>NGT 44-006-801</b>	<b>Rice University</b>		<b>4518</b>
	Graduate student researchers program		
	<i>Period</i>	<i>Obligations</i>	
	08/01/82-07/31/84	FY83: \$12,880 TOTAL: \$23,760	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bernstein, W.	HQ-LB/Owens, F. C.	13-Physics	
<b>NGT 44-006-802</b>	<b>Rice University</b>		<b>4519</b>
	Graduate student researchers program		
	<i>Period</i>	<i>Obligations</i>	
	09/01/82-08/31/84	FY83: \$13,000 TOTAL: \$21,100	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Leeman, W. R.	HQ-LB/Owens, F. C.	32-Geological Sci	
<b>NGT 44-006-803</b>	<b>Rice University</b>		<b>4520</b>
	NASA graduate student researchers program		
	<i>Period</i>	<i>Obligations</i>	
	06/01/83-05/31/84	FY83: \$12,300 TOTAL: \$12,300	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Rabson, T. A.	HQ-LB/Owens, F. C.	45-Elec Engr	
<b>NGT 44-006-804</b>	<b>Rice University</b>		<b>4521</b>
	NASA graduate student researchers program		
	<i>Period</i>	<i>Obligations</i>	
	04/15/83-04/14/84	FY83: \$10,300 TOTAL: \$10,300	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Burrus, C. S.	HQ-LB/Owens, F. C.	45-Elec Engr	
<b>NSG 5286</b>	<b>Rice University</b>		<b>4522</b>
	Investigation of low altitude plasma phenomena		
	<i>Period</i>	<i>Obligations</i>	
	07/01/78-03/31/82	FY83: TOTAL: \$66,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Reiff, P. H.	GSFC/Spencer, N. W.	31-Atmos Sci	

**NASA'S UNIVERSITY PROGRAM**  
**TEXAS (Continued)**

**NSG 7032** **Rice University** **4523**  
Apollo data synthesis: Lunar atmosphere and ionosphere  
*Period* *Obligations*  
04/01/74-03/01/83 FY83: TOTAL: \$90,307  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Michel, F. C. HQ-EL/Quaide, W. L. 31-Atmos Sci

**NSG 7043** **Rice University** **4524**  
Research on planetary atmospheres  
*Period* *Obligations*  
03/01/74-01/31/84 FY83: \$35,000 TOTAL: \$412,625  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Chamberlain, J. W. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NSG 7361** **Rice University** **4525**  
Origin of the solar system: The relationship of isotopic and chemical anomalies in meteorites Earth, Moon and planets to astrophysical models of their origin  
*Period* *Obligations*  
08/01/77-04/30/84 FY83: \$22,983 TOTAL: \$141,764  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Clayton, D. D. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/Taylor, L. A.

**NSG 7386** **Rice University** **4526**  
Study of ion-molecule reactions of importance in planetary atmosphere  
*Period* *Obligations*  
09/01/77-02/29/84 FY83: \$40,000 TOTAL: \$229,629  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stebbing, R. F. HQ-EL/Brinton, H. C. 31-Atmos Sci

**NAG 1-317** **Southern Methodist University** **4527**  
An experimental study of the properties of surface pressure fluctuations in strong adverse pressure gradient turbulent boundary layers  
*Period* *Obligations*  
12/01/82-11/30/83 FY83: \$36,515 TOTAL: \$36,515  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Simpson, R. L. LARC/Brooks, T. F. 46-Mech Engr

**NAG 5-298** **Southern Methodist University** **4528**  
Constraints on lithospheric structure from satellite potential field data  
*Period* *Obligations*  
03/01/83-02/29/84 FY83: \$40,000 TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Phillips, R. J. GSFC/Kouns, C. W. 32-Geological Sci  
Burke, K. C. GSFC/Frey, H.

**NAGW 459** **Southern Methodist University** **4529**  
Planetary interior modeling and tectonic implications  
*Period* *Obligations*  
06/01/83-05/31/84 FY83: \$62,434 TOTAL: \$62,434  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Phillips, R. J. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NAS 9-16438** **Southern Methodist University** **4530**  
Study establishment of a center of excellence for applied mathematical and statistical research  
*Period* *Obligations*  
08/01/81-10/31/83 FY83: \$44,957 TOTAL: \$196,722  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gray, H. L. JSC/Houston, G. 21-Mathematics

**NCC 9-9** **Southern Methodist University** **4531**  
Crop area estimation based on remotely sensed data with an accurate but costly subsample  
*Period* *Obligations*  
01/01/83-12/31/83 FY83: \$39,962 TOTAL: \$39,962  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gunst, R. F. JSC/Browne, I. D. 21-Mathematics

**NGT 44-007-800** **Southern Methodist University** **4532**  
Graduate student researchers program  
*Period* *Obligations*  
06/01/80-08/31/83 FY83: TOTAL: \$30,315  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dungan, M. A. HQ-LB/Carter, C. H. 32-Geological Sci

**NAS 9-16670** **Southwestern University** **4533**  
Preliminary design of an earth-based debris detection system  
*Period* *Obligations*  
06/01/82-05/31/83 FY83: TOTAL: \$8,262  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Morgan, T. H. JSC/Robbins, D. E. 39-Env Sci, NEC

**NAGW 382** **Sul Ross State University** **4534**  
Galilean satellite mapping program  
*Period* *Obligations*  
10/15/82-12/15/83 FY83: \$7,255 TOTAL: \$7,255  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Whitford-stark H, J. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAGW 394** **Sul Ross State University** **4535**  
Photogeologic and remote sensing analysis of planetary volcanism and tectonics  
*Period* *Obligations*  
12/01/82-02/28/84 FY83: \$20,837 TOTAL: \$20,837  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Whitford-stark H, J. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAS 9-16718** **Texas A&I University** **4536**  
Climate-vegetation. Gradient modeling based on NOAA/AVHRR imagery  
*Period* *Obligations*  
09/01/82-08/31/83 FY83: TOTAL: \$3,250  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Greegor, D. JSC/Demel, K. J. 32-Geological Sci

**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

<b>NAG 1-326</b>		<b>Texas A&amp;M University System</b>	<b>4537</b>
Basic studies in computational fluid dynamics			
<i>Period</i>	<i>Obligations</i>		
01/06/83-06/05/83	FY83: \$16,079	TOTAL: \$16,079	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Cross, E. J.	LARC/Margason, R. J.	41-Aero Engr	
Anderson, W. K.			
<b>NAG 1-417</b>		<b>Texas A&amp;M University</b>	<b>4544</b>
Heating requirements and non-adiabatic surface effects for models in the national transonic facility			
<i>Period</i>	<i>Obligations</i>		
10/01/83-09/30/84	FY83: \$33,198	TOTAL: \$33,198	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
MacHa, J. M.	LARC/Johnson, C. B.	41-Aero Engr	
	LARC/Kilgore, R. A.		
<b>NAG 1-11</b>		<b>Texas A&amp;M University</b>	<b>4538</b>
Analytical study of jet shielding			
<i>Period</i>	<i>Obligations</i>		
01/01/80-09/30/83	FY83:	TOTAL: \$109,980	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gerhold, C. H.	LARC/Yu, J. C.	41-Aero Engr	
<b>NAG 1-112</b>		<b>Texas A&amp;M University</b>	<b>4539</b>
The role of coherent structures in the generation of noise for subsonic jets			
<i>Period</i>	<i>Obligations</i>		
11/01/80-04/30/84	FY83: \$49,993	TOTAL: \$129,979	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Morrison, G. L.	LARC/Yu, J. C.	13-Physics	
<b>NAG 1-184</b>		<b>Texas A&amp;M University</b>	<b>4540</b>
Research on composite wing extensions for general aviation aircraft			
<i>Period</i>	<i>Obligations</i>		
05/01/81-08/31/83	FY83:	TOTAL: \$59,089	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Horn, W. J.	LARC/Dow, M. B.	41-Aero Engr	
Nicks, O. W.	LARC/Dexter, H. B.		
<b>NAG 1-214</b>		<b>Texas A&amp;M University</b>	<b>4541</b>
Airframe/propeller propulsion integration state-of-technology survey			
<i>Period</i>	<i>Obligations</i>		
09/01/81-09/30/83	FY83:	TOTAL: \$39,731	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Miley, S. J.	LARC/Koenig, R. W.	41-Aero Engr	
<b>NAG 1-309</b>		<b>Texas A&amp;M University</b>	<b>4542</b>
An environmental investigation of the effects of surface imperfections on the performance of two-single-engine general aviation aircraft with low drag			
<i>Period</i>	<i>Obligations</i>		
11/04/82-05/03/84	FY83: \$85,000	TOTAL: \$85,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ward, D. T.	LARC/Holmes, B. J.	41-Aero Engr	
Korkan, K. D.			
<b>NAG 1-344</b>		<b>Texas A&amp;M University</b>	<b>4543</b>
Basic studies in configurational aerodynamics for low speed aircraft			
<i>Period</i>	<i>Obligations</i>		
04/01/83-03/31/84	FY83: \$216,041	TOTAL: \$216,041	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Cross Jr., E. J.	LARC/Stickle, J. W.	41-Aero Engr	
Korkan, K. D.			
Miley, S. J.			
<b>NAG 3-31</b>		<b>Texas A&amp;M University</b>	<b>4545</b>
Constitutive models for cyclic plasticity and creep behavior of superalloys at high temperature			
<i>Period</i>	<i>Obligations</i>		
04/01/80-09/30/83	FY83:	TOTAL: \$152,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Haisler, W. E.	LERC/Thompson, R. L.	47-Materials Engr	
Bradley, W. L.			
<b>NAG 3-129</b>		<b>Texas A&amp;M University</b>	<b>4546</b>
Investigations into the injection molding of PMR15 polyimide			
<i>Period</i>	<i>Obligations</i>		
01/01/81-11/30/83	FY83:	TOTAL: \$99,407	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lee, S. W.	LERC/Serafina, T. T.	47-Materials Engr	
	LERC/Vannucci, R. D.		
<b>NAG 3-142</b>		<b>Texas A&amp;M University</b>	<b>4547</b>
Evaluation of reformed methanol as an automotive engine fuel			
<i>Period</i>	<i>Obligations</i>		
12/15/80-06/28/84	FY83: \$24,881	TOTAL: \$199,881	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lalk, T. R.	LERC/Clark, J. S.	46-Mech Engr	
<b>NAG 3-181</b>		<b>Texas A&amp;M University</b>	<b>4548</b>
Compressible and incompressible fluid seals: Influence on rotordynamic response and stability			
<i>Period</i>	<i>Obligations</i>		
06/01/81-12/13/83	FY83: \$142,959	TOTAL: \$309,570	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Childs, D. W.	LERC/Hendricks, R. C.	46-Mech Engr	
Nelson, C. C.			
<b>NAG 3-242</b>		<b>Texas A&amp;M University</b>	<b>4549</b>
Propeller/rotor icing study			
<i>Period</i>	<i>Obligations</i>		
12/15/81-12/13/83	FY83: \$40,793	TOTAL: \$81,793	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Korkan, K. D.	LERC/Shaw, R. J.	41-Aero Engr	
<b>NAG 3-272</b>		<b>Texas A&amp;M University</b>	<b>4550</b>
Study of air foils for propeller applications			
<i>Period</i>	<i>Obligations</i>		
04/15/82-10/14/83	FY83: \$16,134	TOTAL: \$48,134	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Korkan, K. D.	LERC/Hughes, C. E.	41-Aero Engr	
	LERC/Mikkelsen, D. C.		



**NASA'S UNIVERSITY PROGRAM  
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<b>NAG 3-311</b>		<b>Texas A&amp;M University</b>	<b>4551</b>
Heat transfer and pressure drop in blade cooling channels with turbulence promoters			
<i>Period</i>	<i>Obligations</i>		
08/01/82-12/31/83	FY83: TOTAL: \$69,105		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Han, J. C.	LERC/Boyle, R. J.	46-Mech Engr	
	LERC/Stepka, F. S.		
<b>NAG 3-314</b>		<b>Texas A&amp;M University</b>	<b>4552</b>
Measurement of the elastic constants of B2 cobalt, nickel and iron aluminides as a function of temperature and composition			
<i>Period</i>	<i>Obligations</i>		
09/01/82-08/30/84	FY83: \$40,927 TOTAL: \$87,539		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wolfenden, A.	LERC/Whittenberger, J. D.	47-Materials Engr	
<b>NAG 3-354</b>		<b>Texas A&amp;M University</b>	<b>4553</b>
Study of propeller aerocoustic methodologies			
<i>Period</i>	<i>Obligations</i>		
11/15/82-11/14/83	FY83: \$53,365 TOTAL: \$53,365		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Korkan, K. D.	LERC/Dittmar, J. H.	41-Aero Engr	
	LERC/Rice, E. J.		
<b>NAG 5-31</b>		<b>Texas A&amp;M University</b>	<b>4554</b>
Investigation of remote sensing techniques for measuring soil moisture			
<i>Period</i>	<i>Obligations</i>		
03/01/80-02/29/84	FY83: \$255,000 TOTAL: \$984,200		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Newton, R. W.	GSFC/Schmugge, T. J.		
Vanbavel, C. H.	GSFC/Blanchard, B. J.	32-Geological Sci	
Blanchard, A.			
<b>NAG 5-94</b>		<b>Texas A&amp;M University</b>	<b>4555</b>
Research of altimetry data over trenches and island arcs and convection			
<i>Period</i>	<i>Obligations</i>		
09/01/80-07/31/84	FY83: \$24,679 TOTAL: \$99,341		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Caputo, M.	GSFC/Welker, J. E.	32-Geological Sci	
	GSFC/Taylor, P. T.		
<b>NAS 2-10272</b>		<b>Texas A&amp;M University</b>	<b>4556</b>
Modification of a Swearingen metro wind tunnel model			
<i>Period</i>	<i>Obligations</i>		
06/19/79-12/31/83	FY83: TOTAL: \$354,766		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Brusse, J. C.	ARC/Gambucci, B. J.	41-Aero Engr	
	ARC/Williams, L. J.		
<b>NAS 5-22966</b>		<b>Texas A&amp;M University</b>	<b>4557</b>
Nimbus-G experiment team for coastal zone color scanner			
<i>Period</i>	<i>Obligations</i>		
02/10/76-01/31/84	FY83: \$22,930 TOTAL: \$460,560		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
El-sayed, S. Z.	GSFC/Szajna, E. F.	33-Oceanography	
Trees, C.			
<b>NAS 5-26686</b>		<b>Texas A&amp;M University</b>	<b>4558</b>
Acquisition of a multi-frequency radar system			
<i>Period</i>	<i>Obligations</i>		
10/19/81-10/18/83	FY83: TOTAL: \$81,042		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Blanchard, A. J.	GSFC/Wang, J. R.	45-Elec Engr	
<b>NAS 6-2884</b>		<b>Texas A&amp;M University</b>	<b>4559</b>
Study of the dynamics of ocean surface current and Kuroshio circulation			
<i>Period</i>	<i>Obligations</i>		
02/01/78-12/31/82	FY83: TOTAL: \$34,199		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ichiye, T.	GSFC/Huang, N.	33-Oceanography	
<b>NAS 8-33716</b>		<b>Texas A&amp;M University</b>	<b>4560</b>
Space Shuttle main engine fuel turbopump interstage seal test program			
<i>Period</i>	<i>Obligations</i>		
02/29/80-12/31/83	FY83: \$70,000 TOTAL: \$533,676		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
McDermott, M.	MSFC/Garcia, F. F.	46-Mech Engr	
	MSFC/Gross, L. P.		
<b>NAS 8-33776</b>		<b>Texas A&amp;M University</b>	<b>4561</b>
Diagnostic analysis of the environment of severe storms using atmospheric variability			
<i>Period</i>	<i>Obligations</i>		
02/12/80-05/31/83	FY83: TOTAL: \$80,108		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Scoggins, J. R.	MSFC/Turner, R. E.	31-Atmos Sci	
Turner, R. E.	MSFC/Hill, C. K.		
<b>NAS 8-34133</b>		<b>Texas A&amp;M University</b>	<b>4562</b>
Satellite ground-based special mesoscale network and data processing			
<i>Period</i>	<i>Obligations</i>		
02/05/81-05/31/83	FY83: TOTAL: \$277,467		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Scoggins, J. R.	MSFC/Turner, R. E.	31-Atmos Sci	
	MSFC/Hill, C. K.		
<b>NAS 8-34505</b>		<b>Texas A&amp;M University</b>	<b>4563</b>
Definition of forces on turbomachining rotors			
<i>Period</i>	<i>Obligations</i>		
10/27/81-12/30/83	FY83: \$70,000 TOTAL: \$126,376		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Childs, D. W.	MSFC/Fox, T. W.	46-Mech Engr	
	MSFC/Garcia, F.		
<b>NAS 8-34532</b>		<b>Texas A&amp;M University</b>	<b>4564</b>
Mesoscale observational sounding program			
<i>Period</i>	<i>Obligations</i>		
07/20/81-08/31/83	FY83: TOTAL: \$102,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Scoggins, J. R.	MSFC/Turner, R. E.	31-Atmos Sci	
	MSFC/Hill, K.		

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<b>NAS 8-34536</b>		<b>Texas A&amp;M University</b>	<b>4565</b>
Labyrinth seals for incompressible fluids			
<i>Period</i>	<i>Obligations</i>		
09/30/81-11/29/83	FY83: \$23,745	TOTAL: \$223,745	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Morrison, G. L.	MSFC/Garcia, F. F.	46-Mech Engr	
	MSFC/Gross, L. A.		
<b>NAS 8-34735</b>		<b>Texas A&amp;M University</b>	<b>4566</b>
Visible infrared spin-scan radiometer atmospheric sounder sounding data evolution			
<i>Period</i>	<i>Obligations</i>		
07/19/82-02/28/84	FY83: \$19,951	TOTAL: \$81,898	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Scoggins, J. R.	MSFC/Arnold, J. E.	31-Atmos Sci	
	MSFC/Smith, G. T.		
<b>NAS 8-34912</b>		<b>Texas A&amp;M University</b>	<b>4567</b>
Technical audit of the GPSS model of external tank manufacturing			
<i>Period</i>	<i>Obligations</i>		
05/01/82-04/30/83	FY83: \$16,872	TOTAL: \$38,480	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Unavailable	MSFC/Smelser, J. W.	49-Engr, NEC	
	MSFC/McBride, C. H.		
<b>NAS 8-34972</b>		<b>Texas A&amp;M University</b>	<b>4568</b>
Vas sounding data study			
<i>Period</i>	<i>Obligations</i>		
08/26/82-01/25/84	FY83: \$14,993	TOTAL: \$49,993	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Huebner, G. L.	MSFC/Arnold, J. E.	31-Atmos Sci	
	MSFC/Turner, R. E.		
<b>NAS 8-35083</b>		<b>Texas A&amp;M University</b>	<b>4569</b>
Shuttle projects/MSFC elements management information system			
<i>Period</i>	<i>Obligations</i>		
10/27/82-07/27/83	FY83: \$253,715	TOTAL: \$253,715	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Foster, J. W.	MSFC/Ledford, H.	49-Engr, NEC	
Hogg, G. L.	MSFC/Self, D. O.		
<b>NAS 8-35182</b>		<b>Texas A&amp;M University</b>	<b>4570</b>
Application of satellite data to tropic/subtropic moisture coupling			
<i>Period</i>	<i>Obligations</i>		
04/06/83-04/05/86	FY83: \$99,200	TOTAL: \$99,200	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Thompson, A. H.	MSFC/Kaufman, J. W.	31-Atmos Sci	
McGuirk, J. P.	MSFC/Smith, G. T.		
<b>NAS 9-13894</b>		<b>Texas A&amp;M University</b>	<b>4571</b>
Classification techniques evaluation and yield modeling for a large crop inventory project			
<i>Period</i>	<i>Obligations</i>		
01/15/74-12/31/82	FY83:	TOTAL: \$571,036	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Sielken, R. L.	JSC/Browne, I. D.	22-Computer Science	
<b>NAS 9-14828</b>		<b>Texas A&amp;M University</b>	<b>4572</b>
Lunar sample irradiation services			
<i>Period</i>	<i>Obligations</i>		
11/01/75-08/31/83	FY83:	TOTAL: \$80,680	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Randall, J. D.	JSC/Blanchard, D.	39-Env Sci, NEC	
<b>NAS 9-16185</b>		<b>Texas A&amp;M University</b>	<b>4573</b>
Chemical analysis of Martian analog samples			
<i>Period</i>	<i>Obligations</i>		
08/01/80-06/30/82	FY83:	TOTAL: \$5,627	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Young, V.	JSC/Gibson, E. K.	12-Chemistry	
<b>NAS 9-16375</b>		<b>Texas A&amp;M University</b>	<b>4574</b>
Study of behavioral modifications resultings from exposure to high linear energy transfer (LET) radiation			
<i>Period</i>	<i>Obligations</i>		
06/01/81-01/30/83	FY83:	TOTAL: \$30,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Hightower, D.	JSC/Barnes, C. M.	56-Medical Sciences	
<b>NAS 9-16403</b>		<b>Texas A&amp;M University</b>	<b>4575</b>
Verification, through computer simulation, of a wide-swath synthetic aperture radar concept design			
<i>Period</i>	<i>Obligations</i>		
06/15/81-07/15/82	FY83:	TOTAL: \$30,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Jean, R.	JSC/Pels, G. F.	22-Computer Science	
<b>NAS 9-16443</b>		<b>Texas A&amp;M University</b>	<b>4576</b>
Jet exhaust, ice suppression system validation study			
<i>Period</i>	<i>Obligations</i>		
08/05/81-12/01/83	FY83: \$35,000	TOTAL: \$152,673	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Porteiro, J. R.	JSC/Stroughal, G.	49-Engr, NEC	
Norton, D. J.			
<b>NAS 9-16447</b>		<b>Texas A&amp;M University</b>	<b>4577</b>
Studies in mathematical pattern recognition and image analysis			
<i>Period</i>	<i>Obligations</i>		
09/01/81-10/31/82	FY83:	TOTAL: \$97,400	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gusemanjr, L. F.	JSC/Browne, I. D.	39-Env Sci, NEC	
Schumaker, L.	JSC/Heydorn, R. P.		
<b>NAS 9-16556</b>		<b>Texas A&amp;M University</b>	<b>4578</b>
Develop warning system of crop moisture conditions			
<i>Period</i>	<i>Obligations</i>		
02/26/82-10/31/82	FY83:	TOTAL: \$40,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
McFarland, M. J.	JSC/Whitehead, V. S.	22-Computer Science	
<b>NAS 9-16601</b>		<b>Texas A&amp;M University</b>	<b>4579</b>
Application of GOES thermal data to the crop water stress indicator model			
<i>Period</i>	<i>Obligations</i>		
04/28/82-08/31/83	FY83:	TOTAL: \$20,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Franceschini, G.	JSC/Whitehead, V.	31-Atmos Sci	

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<b>NAS 9-16606</b>		<b>Texas A&amp;M University</b>	<b>4580</b>
Create mathematical model of dual passage heat pipes during steady-state and transient operation			
<i>Period</i>	<i>Obligations</i>		
07/15/82-02/04/83	FY83:	TOTAL: \$6,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Peterson, G. P.	JSC/Rankin, G.	46-Mech Engr	
<b>NAS 9-16664</b>		<b>Texas A&amp;M University</b>	<b>4581</b>
Mathematical pattern recognition and image analysis program			
<i>Period</i>	<i>Obligations</i>		
07/16/82-07/15/85	FY83: \$704,000	TOTAL: \$1,498,557	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Guseman, L. F., Jr.	JSC/Browne, I. D.	39-Env Sci, NEC	
<b>NAS 9-16674</b>		<b>Texas A&amp;M University</b>	<b>4582</b>
Scene analysis generic research			
<i>Period</i>	<i>Obligations</i>		
06/01/82-05/31/83	FY83: \$26,448	TOTAL: \$51,448	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Heilman, J. L.	JSC/Browne, I. D.	39-Env Sci, NEC	
<b>NAS 9-16717</b>		<b>Texas A&amp;M University</b>	<b>4583</b>
Ground scatterometer cross-calibration			
<i>Period</i>	<i>Obligations</i>		
09/08/82-11/30/82	FY83:	TOTAL: \$35,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Blanchard, A. J.	JSC/Nuss, R.	19-Phys Sci, NEC	
Newton, R. W.			
<b>NAS 9-16785</b>		<b>Texas A&amp;M University</b>	<b>4584</b>
Area estimation using multiyear designs and partial identification			
<i>Period</i>	<i>Obligations</i>		
11/01/82-11/01/83	FY83: \$39,722	TOTAL: \$39,722	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Sielken, R. L., Jr.	JSC/Actkinson, A. L.	39-Env Sci, NEC	
<b>NAS 9-16822</b>		<b>Texas A&amp;M University</b>	<b>4585</b>
Development of an early warning system of crop moisture conditions using passive microwave			
<i>Period</i>	<i>Obligations</i>		
02/17/83-10/31/83	FY83: \$55,000	TOTAL: \$55,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
McFarland, M. J.	JSC/Whitehead, V.22-Computer Science		
<b>NASW 3557</b>		<b>Texas A&amp;M University</b>	<b>4586</b>
Research for and preparation of a manuscript for a NASA special publication, 'NASA mechanical explorers'			
<i>Period</i>	<i>Obligations</i>		
12/01/81-12/31/83	FY83:	TOTAL: \$86,325	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Nicks, O. W.	HQ-NS/Rowsome, F.	73-History	
<b>NCA 2-773101</b>		<b>Texas A&amp;M University</b>	<b>4587</b>
Development of analytical procedures for helicopter rotor tip aerodynamics			
<i>Period</i>	<i>Obligations</i>		
02/01/81-12/31/83	FY83:	TOTAL: \$60,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Hall, G. F.	ARC/Shockey, G. A.	41-Aero Engr	
Miley, S. J.			
<b>NCA 2-773201</b>		<b>Texas A&amp;M University</b>	<b>4588</b>
Selection study of an acoustic sensing aircraft for in-flight helicopter noise measurements			
<i>Period</i>	<i>Obligations</i>		
06/01/82-09/30/83	FY83:	TOTAL: \$30,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ward, D. T.	ARC/Shockey, G. A.	41-Aero Engr	
Miley, S. J.			
<b>NCA 2-773301</b>		<b>Texas A&amp;M University</b>	<b>4589</b>
Investigation of helicopter rotor blade/wake interaction impulsive noise			
<i>Period</i>	<i>Obligations</i>		
06/01/83-05/31/84	FY83: \$40,000	TOTAL: \$40,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Miley, S.	ARC/Watts, M. E.	41-Aero Engr	
Hall, G. F.	ARC/Shockey, G. A.		
Von Lavante, E.			
<b>NCC 2-78</b>		<b>Texas A&amp;M University</b>	<b>4590</b>
Studies of advanced wing configurations			
<i>Period</i>	<i>Obligations</i>		
06/01/80-06/30/83	FY83:	TOTAL: \$77,810	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Chevalier, H.	ARC/Corsiglia, V. R.	41-Aero Engr	
<b>NCC 2-102</b>		<b>Texas A&amp;M University</b>	<b>4591</b>
Air pollutant production by algal cell cultures			
<i>Period</i>	<i>Obligations</i>		
11/01/80-07/15/82	FY83:	TOTAL: \$51,547	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Fong, F.	ARC/Zill, L. P.	54-Env Biology	
<b>NCC 2-260</b>		<b>Texas A&amp;M University</b>	<b>4592</b>
Development of analytical procedures for helicopter rotor tip aerodynamics			
<i>Period</i>	<i>Obligations</i>		
09/01/83-08/31/84	FY83: \$76,710	TOTAL: \$76,710	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Hall, G. F.	ARC/Shockey, G. A.	41-Aero Engr	
Miley, S. J.	ARC/Watts, M. E.		
<b>NGR 44-001-117</b>		<b>Texas A&amp;M University</b>	<b>4593</b>
Radiative transfer in realistic planetary atmospheres			
<i>Period</i>	<i>Obligations</i>		
07/19/71-08/31/82	FY83:	TOTAL: \$304,262	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Kattawar, G. W.	HQ-EL/Brinton, H. C.	31-Atmos Sci	

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<b>NGT 44-001-800</b>	<b>Texas A&amp;M University</b>		<b>4594</b>
	Summer faculty fellowship program in engineering systems design		
	<i>Period</i>	<i>Obligations</i>	
	01/01/80-03/31/84	FY83: \$241,067 TOTAL: \$646,980	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Horn, W. J.	HQ-LB/Owens, F. C.	49-Engr, NEC
<b>NGT 44-001-801</b>	<b>Texas A&amp;M University</b>		<b>4595</b>
	Shearing of atmospherically driven nearshore dynamics		
	<i>Period</i>	<i>Obligations</i>	
	09/01/80-03/31/84	FY83: TOTAL: \$34,205	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	McGrail, D. W.	HQ-LB/Owens, F. C.	32-Geological Sci
<b>NGT 44-001-802</b>	<b>Texas A&amp;M University</b>		<b>4596</b>
	NASA graduate student researchers program		
	<i>Period</i>	<i>Obligations</i>	
	06/01/83-05/31/84	FY83: \$11,200 TOTAL: \$11,200	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Heilman, J. L.	HQ-LB/Owens, F. C.	51-Biological Sci
<b>NSG 1174</b>	<b>Texas A&amp;M University</b>		<b>4597</b>
	Development of inverse transonic airfoil design methods including boundary layer and viscous interaction effects		
	<i>Period</i>	<i>Obligations</i>	
	05/01/75-01/31/84	FY83: TOTAL: \$179,641	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Carlson, L. A.	LARC/Everhart, J. L.	41-Aero Engr
		LARC/South, J. C.	
<b>NAG 1-28</b>	<b>Texas Tech University</b>		<b>4598</b>
	Lightning sensors and data interpretation		
	<i>Period</i>	<i>Obligations</i>	
	01/15/80-04/14/84	FY83: \$75,000 TOTAL: \$270,309	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Trost, T. F.	LARC/Pitts, F. L.	45-Elec Engr
	Craig, J. P.	LARC/Zaepfel, K. P.	
<b>NAG 2-189</b>	<b>Texas Tech University</b>		<b>4599</b>
	Nonlinear systems		
	<i>Period</i>	<i>Obligations</i>	
	10/01/82-10/31/83	FY83: TOTAL: \$31,325	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hunt, L. R.	ARC/Meyer, G.	49-Engr, NEC
<b>NAG 2-203</b>	<b>Texas Tech University</b>		<b>4600</b>
	System theory and algorithms of totally automatic flight control systems		
	<i>Period</i>	<i>Obligations</i>	
	10/01/82-10/31/83	FY83: \$31,344 TOTAL: \$31,344	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Su, R.	ARC/Meyer, G.	49-Engr, NEC
<b>NGT 44-011-800</b>	<b>Texas Tech University</b>		<b>4601</b>
	Equilibrium deprivation and its effects on the nervous system		
	<i>Period</i>	<i>Obligations</i>	
	06/15/80-09/14/82	FY83: TOTAL: \$18,713	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hartman, H. B.	HQ-LB/Carter, C. H.	51-Biological Sci
<b>NSG 2137</b>	<b>Texas Tech University</b>		<b>4602</b>
	Pharmacological prevention of calcium and bone loss		
	<i>Period</i>	<i>Obligations</i>	
	05/01/76-12/31/83	FY83: \$18,000 TOTAL: \$97,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Kenny, A. D.	ARC/Young, D. R.	56-Medical Sciences
<b>NAG 1-370</b>	<b>University of Houston - Houston</b>		<b>4603</b>
	Development of identification algorithms for large space systems		
	<i>Period</i>	<i>Obligations</i>	
	06/01/83-05/31/84	FY83: \$70,972 TOTAL: \$70,972	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Denman, E. D.	LARC/Horner, G. C.	49-Engr, NEC
<b>NAG 1-388</b>	<b>University of Houston - Houston</b>		<b>4604</b>
	Nondestructive evaluation of residual stress in low-carbon steels		
	<i>Period</i>	<i>Obligations</i>	
	09/01/83-08/31/84	FY83: \$32,817 TOTAL: \$32,817	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Salama, K.	LARC/Heyman, J. S.	46-Mech Engr
		LARC/Cantrell, J. H., Jr.	
<b>NAG 3-198</b>	<b>University of Houston - Houston</b>		<b>4605</b>
	Investigations of basic mechanisms in aeroacoustics		
	<i>Period</i>	<i>Obligations</i>	
	07/01/81-06/30/82	FY83: TOTAL: \$55,930	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hussain, A. K.	MSFC/Stone, J. R.	41-Aero Engr
<b>NAG 3-408</b>	<b>University of Houston - Houston</b>		<b>4606</b>
	Interaction of free turbulent shear flows and sound		
	<i>Period</i>	<i>Obligations</i>	
	03/25/83-03/24/86	FY83: \$95,608 TOTAL: \$95,608	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hussain, A. K.	LERC/Stone, J. R.	41-Aero Engr
<b>NAG 6-18</b>	<b>University of Houston - Houston</b>		<b>4607</b>
	Program to observe X-ray auroral quenching in Waterhole II		
	<i>Period</i>	<i>Obligations</i>	
	04/01/81-06/30/84	FY83: \$50,000 TOTAL: \$105,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Sheldon, W. R.	GSFC/Early, L. J.	13-Physics
	Benbrook, J. R.	GSFC/Pless, R. H.	
	Bering, E. A.		
<b>NAGW 169</b>	<b>University of Houston - Houston</b>		<b>4608</b>
	Galilean satellite geologic mapping		
	<i>Period</i>	<i>Obligations</i>	
	04/01/81-04/30/84	FY83: \$9,950 TOTAL: \$30,602	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	King, E. A.	HQ-EL/Boyce, J. M.	32-Geological Sci
		HQ-EL/Holt, H. E.	

**NASA'S UNIVERSITY PROGRAM  
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**NAGW 178 University of Houston - Houston 4609**  
High temperature volatilization experiment with materials approximating solar composition

Period	Obligations
04/01/81-04/30/84	FY83: \$26,121 TOTAL: \$76,060
Prin. Invest.	NASA Tech. Officer CASE Category
King, E. A.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NAGW 439 University of Houston - Houston 4610**  
Crater formation and obliteration on the Jovian satellites

Period	Obligations
03/01/83-02/31/84	FY83: \$35,988 TOTAL: \$35,988
Prin. Invest.	NASA Tech. Officer CASE Category
Woronow, A.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NAS 2-11165 University of Houston - Houston 4611**  
The influence of weightlessness on lignification in developing plant seedlings

Period	Obligations
01/01/82-12/31/83	FY83: \$89,570 TOTAL: \$174,211
Prin. Invest.	NASA Tech. Officer CASE Category
Cowles, J. R.	ARC/Tremor, J. W. 59-Life Sci, NEC

**NAS 8-34955 University of Houston - Houston 4612**  
Susceptibility apparatus

Period	Obligations
08/30/82-05/31/83	FY83: TOTAL: \$7,475
Prin. Invest.	NASA Tech. Officer CASE Category
Chu, C. W.	MSFC/Ratz, T. J. 13-Physics
	MSFC/Robinson, M. B.

**NAS 8-35161 University of Houston - Houston 4613**  
Effects of undercooling and modified microstructure on the physical properties of materials synthesized in the drop-tube and drop-tower

Period	Obligations
12/17/82-12/16/84	FY83: \$165,366 TOTAL: \$165,366
Prin. Invest.	NASA Tech. Officer CASE Category
Chu, C. W.	MSFC/Fogle, V. 47-Materials Engr

**NAS 9-11676 University of Houston - Houston 4614**  
Characterization of heat transfer in nutrient materials

Period	Obligations
04/28/71-01/01/84	FY83: TOTAL: \$109,948
Prin. Invest.	NASA Tech. Officer CASE Category
Witte, L. C.	JSC/Sauer, R. L. 59-Life Sci, NEC

**NAS 9-15882 University of Houston - Houston 4615**  
Analysis of volatile metabolites in biological fluids as indicators of prodromal disease conditions

Period	Obligations
06/01/79-12/31/81	FY83: TOTAL: \$77,180
Prin. Invest.	NASA Tech. Officer CASE Category
Zlatkis, A.	JSC/Schneider, H. J. 51-Biological Sci

**NAS 9-15944 University of Houston - Houston 4616**  
Design of a food service habitat for a large scale space station

Period	Obligations
08/23/79-03/20/82	FY83: TOTAL: \$36,800
Prin. Invest.	NASA Tech. Officer CASE Category
Bell, L.	JSC/Smith, M. C. 99-Multi-Discip

**NAS 9-16593 University of Houston - Houston 4617**  
Food service habitat for the space operation center

Period	Obligations
03/21/82-01/31/84	FY83: \$15,000 TOTAL: \$65,000
Prin. Invest.	NASA Tech. Officer CASE Category
Rappole, C.	JSC/Smith, N. C. 99-Multi-Discip

**NAS 9-16980 University of Houston - Houston 4618**  
Riboflavin absorption study

Period	Obligations
08/01/83-12/31/83	FY83: \$10,056 TOTAL: \$10,056
Prin. Invest.	NASA Tech. Officer CASE Category
Feldman, S.	JSC/Degioanni, J. 56-Medical Sciences

**NGR 44-005-002 University of Houston - Houston 4619**  
Studies in organic cosmochemistry, including consideration of compound formation under primitive Earth conditions and of organic material in selected meteorites

Period	Obligations
06/18/62-12/01/83	FY83: \$107,000 TOTAL: \$1,382,590
Prin. Invest.	NASA Tech. Officer CASE Category
Oro, J.	HQ-EB/Geib, D. S. 32-Geological Sci

**NGT 44-005-115 University of Houston - Houston 4620**  
Summer faculty fellowship program in research

Period	Obligations
05/06/74-03/31/82	FY83: TOTAL: \$1,439,126
Prin. Invest.	NASA Tech. Officer CASE Category
Huang, C. J.	HQ-LB/Carter, C. H. 49-Engr, NEC

**NGT 44-005-800 University of Houston - Houston 4621**  
Graduate student researchers program

Period	Obligations
09/01/80-04/30/84	FY83: TOTAL: \$37,000
Prin. Invest.	NASA Tech. Officer CASE Category
Middleditch, B. S.	HQ-LB/Owens, F. C. 19-Phys Sci, NEC

**NGT 44-005-801 University of Houston - Houston 4622**  
Graduate student researchers program

Period	Obligations
06/01/81-05/31/84	FY83: \$13,167 TOTAL: \$37,767
Prin. Invest.	NASA Tech. Officer CASE Category
Heilman, J. L.	HQ-LB/Owens, F. C. 51-Biological Sci

**NGT 44-005-802 University of Houston - Houston 4623**  
NASA graduate student researchers program

Period	Obligations
05/01/83-04/30/84	FY83: \$13,000 TOTAL: \$13,000
Prin. Invest.	NASA Tech. Officer CASE Category
Bell, L.	HQ-LB/Owens, F. C. 59-Life Sci, NEC

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**TEXAS (Continued)**

**NSG 1475 University of Houston - Houston 4624**  
The large-scale coherent structure in the circular jet  

Period	Obligations	
12/01/77-11/30/81	FY83: TOTAL: \$110,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Nadkarni, A. A.	LARC/Maestrello, L.	41-Aero Engr

**NAS 9-16422 University of Houston - Clear Lake 4631**  
Study entitled performance and analysis of JSC ground scatterometer system  

Period	Obligations	
06/01/81-09/30/82	FY83: TOTAL: \$22,050	
Prin. Invest.	NASA Tech. Officer	CASE Category
Dickerson, E. T.	JSC/Fenner, R. G.	11-Astronomy

**NSG 1603 University of Houston - Houston 4625**  
Investigation of algorithms for large space structures  

Period	Obligations	
03/15/79-10/31/82	FY83: TOTAL: \$87,302	
Prin. Invest.	NASA Tech. Officer	CASE Category
Denman, E. D.	LARC/Horner, G. C.	45-Elec Engr

**NAS 9-16815 University of Houston - Clear Lake 4632**  
Advanced sampling, stratification, and aggregation techniques for estimating area, area change and correlated characteristics,  

Period	Obligations	
12/01/82-11/30/83	FY83: \$39,997 TOTAL: \$39,997	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hallum, C. R.	JSC/Actkinson, A. L.	39-Env Sci, NEC

**NSG 2337 University of Houston - Houston 4626**  
The high Reynolds number free shear layer (behind a backward facing step)  

Period	Obligations	
09/01/78-07/31/82	FY83: TOTAL: \$252,420	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hussain, A. K.	ARC/Viegas, J. R.	47-Materials Engr
Kleis, S. J.		

**NAS 9-17010 University of Houston - Clear Lake 4633**  
ADA software language/architecture study  

Period	Obligations	
10/01/83-07/31/86	FY83: \$95,000 TOTAL: \$95,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
McKay, C. W.	JSC/Garman, J. R.	99-Multi-Discip

**NSG 7440 University of Houston - Houston 4627**  
Evolutionary relationships in the microbial world  

Period	Obligations	
06/01/78-12/31/84	FY83: \$30,000 TOTAL: \$277,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Fox, G. E.	HQ-EB/Devincenzi, D. L.	
	HQ-EB/Rambler, M.	51-Biological Sci

**NSG 9043 University of Houston - Clear Lake 4634**  
Cosmic ray and solar flare irradiation history of regolith crystals and agglutinates  

Period	Obligations	
06/01/76-01/31/84	FY83: TOTAL: \$149,600	
Prin. Invest.	NASA Tech. Officer	CASE Category
Blanford, G. E.	JSC/Dietrich, J. W.	13-Physics

**NSG 7551 University of Houston - Houston 4628**  
Mars: Significance of large open spaces within the north polar dune fields  

Period	Obligations	
04/01/79-03/31/82	FY83: TOTAL: \$36,903	
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, R.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Quaide, W. L.	

**NAG 1-384 University of Texas - Austin 4635**  
Determination of fuel optimal flight paths for atmospheric vehicles  

Period	Obligations	
08/01/83-07/31/84	FY83: \$51,703 TOTAL: \$51,703	
Prin. Invest.	NASA Tech. Officer	CASE Category
Speyer, J. L.	LARC/Gracey, C.	41-Aero Engr
Hull, D. G.	LARC/Knox, C. E.	

**NSG 9042 University of Houston - Houston 4629**  
Aromatic biosynthesis in pine tissues  

Period	Obligations	
04/01/76-05/31/84	FY83: TOTAL: \$209,800	
Prin. Invest.	NASA Tech. Officer	CASE Category
Cowles, J. R.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NAG 2-67 University of Texas - Austin 4636**  
Density and temperature structure of clouds around low luminosity young stars  

Period	Obligations	
09/01/80-11/30/83	FY83: \$129,700 TOTAL: \$448,450	
Prin. Invest.	NASA Tech. Officer	CASE Category
Harvey, P. M.	ARC/Haughney, L. C.	11-Astronomy

**NAS 9-16136 University of Houston - Clear Lake 4630**  
Analysis of physical exercise and exercise protocols for space transportation system operation  

Period	Obligations	
09/01/80-12/31/82	FY83: TOTAL: \$80,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Coleman, A. E.	JSC/Bungo, M.	56-Medical Sciences

**NAG 2-133 University of Texas - Austin 4637**  
Spectroscopy of molecular clouds at 5-8 microns from the Kuiper Airborne Observatory  

Period	Obligations	
10/01/81-09/30/83	FY83: TOTAL: \$18,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Evans, N. J.	ARC/Haughney, L. C.	11-Astronomy

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<b>NAG 2-137</b>			
<b>University of Texas - Austin</b>		<b>4638</b>	
Determinants of individual and group performance			
<i>Period</i>	<i>Obligations</i>		
12/01/81-11/30/83	FY83: \$92,500	TOTAL: \$182,500	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Helmreich, R. L.	ARC/Patton, R. M.	62-Social Aspects	
<b>NAG 2-199</b>			
<b>University of Texas - Austin</b>		<b>4639</b>	
Far-infrared photometry of molecular clouds in the outer galaxy from the Kuiper Airborne Observatory			
<i>Period</i>	<i>Obligations</i>		
10/01/82-09/30/84	FY83:	TOTAL: \$9,528	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Evans, N. J., II	ARC/Haughney, L. C.	11-Astronomy	
Kutner, M. L.			
<b>NAG 2-253</b>			
<b>University of Texas - Austin</b>		<b>4640</b>	
Far-infrared photometry of low-mass pre-main -sequence stars with broad CO wings			
<i>Period</i>	<i>Obligations</i>		
10/01/83-09/30/84	FY83: \$18,843	TOTAL: \$18,843	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Evans, N. J.	ARC/Haughney, L. C.	11-Astronomy	
<b>NAG 3-210</b>			
<b>University of Texas - Austin</b>		<b>4641</b>	
Statistical approaches to linear dynamic analysis of aero-structures			
<i>Period</i>	<i>Obligations</i>		
12/18/81-12/16/83	FY83: \$29,966	TOTAL: \$59,499	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Spanos, P. D.	LERC/Chamis, C. C.	41-Aero Engr	
	LERC/Hirschbein, M. S.		
<b>NAG 3-303</b>			
<b>University of Texas - Austin</b>		<b>4642</b>	
Energy stores and associated switches for earth-to-space rail-launcher systems			
<i>Period</i>	<i>Obligations</i>		
10/01/82-10/30/83	FY83: \$54,409	TOTAL: \$108,324	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Weldon, W. F.	LERC/Brasher, M. R.	45-Elec Engr	
<b>NAG 3-317</b>			
<b>University of Texas - Austin</b>		<b>4643</b>	
Development of a transonic cascade flow analysis code using viscous/inviscid coupling concepts			
<i>Period</i>	<i>Obligations</i>		
09/01/82-08/31/84	FY83:	TOTAL: \$59,990	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Dulikravic, G. S.	LERC/Sockol, P. M.	41-Aero Engr	
<b>NAG 3-329</b>			
<b>University of Texas - Austin</b>		<b>4644</b>	
Analysis and development of finite elements methods for the study of nonlinear thermomechanical behavior of structural components			
<i>Period</i>	<i>Obligations</i>		
09/20/82-01/19/84	FY83:	TOTAL: \$63,446	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Oden, J. T.	LERC/Chamis, C. C.	41-Aero Engr	
	LERC/Johns, R. H.		
<b>NAG 3-393</b>			
<b>University of Texas - Austin</b>		<b>4645</b>	
Ground based investigations of surface tension driven convection as a feasibility study for a zero gravity experiment			
<i>Period</i>	<i>Obligations</i>		
02/15/83-08/31/84	FY83: \$40,000	TOTAL: \$40,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Koschmieder, E. L.	LERC/Chai, A. T.	13-Physics	
<b>NAG 5-80</b>			
<b>University of Texas - Austin</b>		<b>4646</b>	
Abundance effects on mass loss in selected stars			
<i>Period</i>	<i>Obligations</i>		
07/01/80-04/30/83	FY83:	TOTAL: \$9,300	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Parsons, S. B.	GSFC/Kondo, Y.	11-Astronomy	
Wray, J. D.			
Bruhweiler, F. C.			
<b>NAG 5-258</b>			
<b>University of Texas - Austin</b>		<b>4647</b>	
The continuum energy distributions in quasars			
<i>Period</i>	<i>Obligations</i>		
10/10/82-09/30/84	FY83: \$3,300	TOTAL: \$5,216	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wills, B. J.	GSFC/Kondo, Y.	11-Astronomy	
Wills, D.			
Netzer, H.			
<b>NAG 5-346</b>			
<b>University of Texas - Austin</b>		<b>4648</b>	
Advanced technique development for the determination of the Earth's gravity field			
<i>Period</i>	<i>Obligations</i>		
07/15/83-07/14/84	FY83: \$30,000	TOTAL: \$30,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Schutz, R. E.	GSFC/Welker, J. E.	32-Geological Sci	
<b>NAG 9-11</b>			
<b>University of Texas - Austin</b>		<b>4649</b>	
Tectonic analysis of the San Luis Basin segment of the Rio Grande rift			
<i>Period</i>	<i>Obligations</i>		
06/01/80-05/31/83	FY83:	TOTAL: \$33,220	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Muehlberger, W. R.	JSC/Blanchard, D. P.	32-Geological Sci	
<b>NAGW 233</b>			
<b>University of Texas - Austin</b>		<b>4650</b>	
Fiducial reference for the Hipparcos reference system			
<i>Period</i>	<i>Obligations</i>		
09/01/81-01/31/84	FY83:	TOTAL: \$18,498	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Duncombe, R. L.	HQ-EZ/Weiler, E. J.	11-Astronomy	
	HQ-EZ/Boggess, N. W.		
<b>NAGW 286</b>			
<b>University of Texas - Austin</b>		<b>4651</b>	
Planetary studies			
<i>Period</i>	<i>Obligations</i>		
01/01/82-08/31/82	FY83:	TOTAL: \$19,980	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Smith, R. S.	HQ-EL/Boyce, J. M.	32-Geological Sci	
	HQ-EL/Holt, H. E.		

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<b>NAGW 390</b>	<b>University of Texas - Austin</b>		<b>4652</b>
	Support of XI Texas symposium in relativistic astrophysics held April 1982		
	<i>Period</i>	<i>Obligations</i>	
	11/15/82-11/14/83	FY83: \$11,237	TOTAL: \$11,237
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Unavailable	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
		HQ-EZ/Opp, A. G.	
<b>NAGW 462</b>	<b>University of Texas - Austin</b>		<b>4653</b>
	Geosat altimetric data: Acquisition and applications		
	<i>Period</i>	<i>Obligations</i>	
	01/01/83-09/30/83	FY83: \$78,000	TOTAL: \$78,000
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Tapley, B. D.	HQ-EE/McGoldrick, L. F.	
	Born, G. H.	HQ-EE/Wilson, W. S.	33-Oceanography
<b>NAS 5-25656</b>	<b>University of Texas - Austin</b>		<b>4654</b>
	Space telescope/high resolution spectrograph		
	<i>Period</i>	<i>Obligations</i>	
	05/09/79-04/01/85	FY83: \$17,000	TOTAL: \$34,784
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Trafton, L. M.	GSFC/Vitagliano, H. D.	11-Astronomy
<b>NAS 5-25948</b>	<b>University of Texas - Austin</b>		<b>4655</b>
	Operation and management of the lunar and satellite laser ranging ground station equipment at McDonald Observatory, Texas		
	<i>Period</i>	<i>Obligations</i>	
	11/15/79-09/30/84	FY83: \$689,844	TOTAL: \$3,423,628
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Shelus, P. J.	GSFC/Hughes, W. E.	11-Astronomy
<b>NAS 5-25991</b>	<b>University of Texas - Austin</b>		<b>4656</b>
	Solid Earth dynamics using laser geodynamics satellite range observations		
	<i>Period</i>	<i>Obligations</i>	
	12/27/79-03/26/83	FY83:	TOTAL: \$269,000
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Tapley, B.	GSFC/Stephanides, C.	19-Phys Sci, NEC
<b>NAS 5-26955</b>	<b>University of Texas - Austin</b>		<b>4657</b>
	Investigation satellite laser ranging applic applications to crustal dynamics		
	<i>Period</i>	<i>Obligations</i>	
	04/07/82-04/06/84	FY83: \$177,232	TOTAL: \$247,232
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Tapley, B. D.	GSFC/Mead, G. D.	32-Geological Sci
<b>NAS 5-27235</b>	<b>University of Texas - Austin</b>		<b>4658</b>
	Crustal dynamics and earthquake research		
	<i>Period</i>	<i>Obligations</i>	
	05/27/82-05/27/84	FY83: \$30,000	TOTAL: \$50,000
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Shelus, P. J.	GSFC/Mead, G.	32-Geological Sci
<b>NAS 5-27344</b>	<b>University of Texas - Austin</b>		<b>4659</b>
	Satellite laser ranging group of the crustal dynamics project		
	<i>Period</i>	<i>Obligations</i>	
	11/16/82-11/16/83	FY83: \$50,265	TOTAL: \$50,265
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Tapley, B. D.	GSFC/Kolenkiewicz, R.	32-Geological Sci
<b>NAS 8-32905</b>	<b>University of Texas - Austin</b>		<b>4660</b>
	Scientific investigation in support of the space telescope project		
	<i>Period</i>	<i>Obligations</i>	
	02/15/78-12/31/84	FY83:	TOTAL: \$285,400
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Lambert, D. L.	MSFC/O'dell, C. R.	11-Astronomy
<b>NAS 8-32906</b>	<b>University of Texas - Austin</b>		<b>4661</b>
	Scientific investigations in support of the space telescope project, to assure that the space telescope will perform astrometric functions		
	<i>Period</i>	<i>Obligations</i>	
	02/01/78-12/31/84	FY83: \$416,000	TOTAL: \$1,537,000
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Jefferys, W. H.	MSFC/Humphreys, J. T.	11-Astronomy
<b>NAS 8-33980</b>	<b>University of Texas - Austin</b>		<b>4662</b>
	Multishaker model testing		
	<i>Period</i>	<i>Obligations</i>	
	09/15/80-10/30/83	FY83:	TOTAL: \$91,229
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Craig, R. C.	MSFC/Kieffling, L. A.	49-Engr, NEC
		MSFC/Ivey, E. W.	
<b>NAS 8-35338</b>	<b>University of Texas - Austin</b>		<b>4663</b>
	Multishaker modal testing		
	<i>Period</i>	<i>Obligations</i>	
	08/10/83-11/09/84	FY83: \$49,786	TOTAL: \$49,786
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Craig, R. R.	MSFC/Kieffling, L.	46-Mech Engr
		MSFC/Jordan, J. D.	
<b>NAS 9-13680</b>	<b>University of Texas - Austin</b>		<b>4664</b>
	Assessment of real gas effects on the extrapolation of shuttle flow field phenomena to flight conditions		
	<i>Period</i>	<i>Obligations</i>	
	09/27/73-08/01/84	FY83: \$50,000	TOTAL: \$333,985
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Bertin, J. J.	JSC/Goodrich, W. D.	41-Aero Engr
<b>NAS 9-16437</b>	<b>University of Texas - Austin</b>		<b>4665</b>
	Computer simulation for multibeam squitmode synthetic aperture radar		
	<i>Period</i>	<i>Obligations</i>	
	09/28/81-10/31/82	FY83:	TOTAL: \$13,934
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Tucker, A. J.	JSC/Krishen, K.	29-Math/Computer, NEC



**NASA'S UNIVERSITY PROGRAM  
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<p><b>NAS 9-16497</b>      <b>University of Texas - Austin</b>      <b>4666</b>  Apq-102 imaging radar digital image quality study  <i>Period</i>      <i>Obligations</i>  11/01/81-10/31/82      FY83:      TOTAL: \$44,955  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Griffin, C. R.      JSC/Pels, G. F.      29-Math/Cmputer,NEC</p>	<p><b>NGR 44-012-152</b>      <b>University of Texas - Austin</b>      <b>4674</b>  A program of planetary studies  <i>Period</i>      <i>Obligations</i>  06/25/69-01/31/84      FY83: \$430,000      TOTAL: \$5,737,186  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Smith, H. J.      HQ-EL/Brunk, W. E.      11-Astronomy  HQ-EL/Brinton, H. C.</p>
<p><b>NAS 9-16744</b>      <b>University of Texas - Austin</b>      <b>4667</b>  Dynamics analysis of electrodynamic satellite tethers  <i>Period</i>      <i>Obligations</i>  10/01/82-09/30/83      FY83: \$9,078      TOTAL: \$22,078  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Nacozy, P. E.      JSC/McCoy, J. E.      46-Mech Engr</p>	<p><b>NGT 44-012-800</b>      <b>University of Texas - Austin</b>      <b>4675</b>  Graduate student researchers program  <i>Period</i>      <i>Obligations</i>  05/01/82-04/30/83      FY83:      TOTAL: \$4,100  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Smith, D.      HQ-LB/Carter, C. H.      32-Geological Sci</p>
<p><b>NAS 9-16875</b>      <b>University of Texas - Austin</b>      <b>4668</b>  Hypervelocity penetration study of composite materials  <i>Period</i>      <i>Obligations</i>  04/01/83-09/30/83      FY83: \$14,500      TOTAL: \$14,500  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Kyriakides, S.      JSC/Crews, J. L.      32-Geological Sci  Yew, C. H.</p>	<p><b>NGT 44-012-801</b>      <b>University of Texas - Austin</b>      <b>4676</b>  NASA graduate student researchers program  <i>Period</i>      <i>Obligations</i>  09/01/83-08/31/84      FY83: \$13,800      TOTAL: \$13,800  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Kyriakides, S.      HQ-LB/Owens, F. C.      47-Materials Engr</p>
<p><b>NAS 9-16955</b>      <b>University of Texas - Austin</b>      <b>4669</b>  Apq-102A imaging radar digital image quality study  <i>Period</i>      <i>Obligations</i>  10/01/83-05/31/84      FY83: \$20,600      TOTAL: \$20,600  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Griffin, C. R.      JSC/Lapoint, D. A.      45-Elec Engr</p>	<p><b>NGT 44-012-802</b>      <b>University of Texas - Austin</b>      <b>4677</b>  NASA graduate student researchers program  <i>Period</i>      <i>Obligations</i>  04/15/83-04/14/84      FY83: \$14,800      TOTAL: \$14,800  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Bash, F. N.      HQ-LB/Owens, F. C.      11-Astronomy</p>
<p><b>NASW 3296</b>      <b>University of Texas - Austin</b>      <b>4670</b>  The contractor shall design, develop, construct and test a fully operational lunar laser ranging station  <i>Period</i>      <i>Obligations</i>  12/01/79-10/01/82      FY83:      TOTAL: \$605,359  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Silverberg, E.      GSFC/Hughes, W. E.      42-Astro Engr</p>	<p><b>NSG 2065</b>      <b>University of Texas - Austin</b>      <b>4678</b>  Antecedents of achievement and creativity  <i>Period</i>      <i>Obligations</i>  02/01/75-08/31/82      FY83:      TOTAL: \$446,287  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Helmreich, R. L.      ARC/Patton, R. M.      69-Psych, NEC</p>
<p><b>NASW 3663</b>      <b>University of Texas - Austin</b>      <b>4671</b>  The role of calcium in regulating the responses of cells and tissues to external stimuli and the potential role of calcium in mediating gravitational responses in plants and animals  <i>Period</i>      <i>Obligations</i>  08/01/82-04/30/83      FY83:      TOTAL: \$25,367  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Roux, S. J.      HQ-EB/Halstead, T. W.      51-Biological Sci</p>	<p><b>NSG 3198</b>      <b>University of Texas - Austin</b>      <b>4679</b>  Acoustic properties of duct lining materials  <i>Period</i>      <i>Obligations</i>  07/01/78-10/30/84      FY83:      TOTAL: \$135,760  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Blackstock, D. T.      LERC/Rice, E. J.      13-Physics  Panton, R. L.      LERC/Baumeister, K. J.</p>
<p><b>NCA 2-781201</b>      <b>University of Texas - Austin</b>      <b>4672</b>  Studies of far-infrared emission lines in planetary nebulae and of the polarization properties of infrared clusters  <i>Period</i>      <i>Obligations</i>  09/15/82-10/15/83      FY83: \$5,400      TOTAL: \$10,903  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Shields, G.      ARC/Werner, M. W.      11-Astronomy</p>	<p><b>NSG 5379</b>      <b>University of Texas - Austin</b>      <b>4680</b>  Ultraviolet spectroscopy of symbiotic stars, recurrent and old novae  <i>Period</i>      <i>Obligations</i>  06/25/79-09/30/84      FY83: \$26,600      TOTAL: \$68,200  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Lambert, D. L.      GSFC/Kondo, Y.      11-Astronomy  Parthasarathy, M.</p>
<p><b>NCC 2-189</b>      <b>University of Texas - Austin</b>      <b>4673</b>  Measurement and modeling of compressible flow fields  <i>Period</i>      <i>Obligations</i>  04/01/82-03/31/84      FY83: \$25,002      TOTAL: \$55,569  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Bertin, J. J.      ARC/Marvin, J. G.      41-Aero Engr  Bouslog, S. A.      ARC/Horstman, C. C.</p>	<p><b>NSG 7232</b>      <b>University of Texas - Austin</b>      <b>4681</b>  Astrophysics of supermassive accretion disks  <i>Period</i>      <i>Obligations</i>  05/01/76-08/01/85      FY83: \$29,000      TOTAL: \$174,171  <i>Prin. Invest.</i>      <i>NASA Tech. Officer</i>      <i>CASE Category</i>  Wheeler, J. C.      HQ-EZ/Stencel, R. E.      39-Env Sci, NEC  Shields, G. A.      HQ-EZ/Weiler, E. J.</p>

<b>NSG 7480</b>	<b>University of Texas - Austin</b>	<b>4682</b>
The cellular bases of gravity-and light-induced geotropism		
<i>Period</i>	<i>Obligations</i>	
08/15/78-10/31/83	FY83:	TOTAL: \$217,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roux, S. J.	HQ-EB/Halstead, T. W.	51-Biological Sci

<b>NSG 7557</b>	<b>University of Texas - Austin</b>	<b>4684</b>
Morphogenetic studies of Martian channels		
<i>Period</i>	<i>Obligations</i>	
04/01/79-07/31/82	FY83:	TOTAL: \$65,941
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Baker, V.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

In space	Period	Obligations
03/24/83-09/01/83	FY83: \$23,412	TOTAL: \$23,412
Prin. Invest.	NASA Tech. Officer	CASE Category
Houtchens, B. A.	HQ-MF/Holt, S. S.	56-Medical Sciences
	HQ-MF/Pritchard, E. B.	

<b>NAG 1-251</b>	<b>University of Texas - Dallas</b>	<b>4686</b>
Investigate performance of miniature valves under shuttle flight environments		
<i>Period</i>	<i>Obligations</i>	
01/19/82-05/18/82	FY83:	TOTAL: \$6,009
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hoffman, J. H.	LARC/Blanchard, R. C.	
	LARC/Jones, J. J.	19-Phys Sci, NEC

<b>NAG 1-256</b>	<b>University of Texas - Dallas</b>	<b>4687</b>
Outgassing and decomposition of Space Shuttle heat protection tiles, fillers and adhesive		
<i>Period</i>	<i>Obligations</i>	
02/01/82-07/31/83	FY83:	TOTAL: \$29,003
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hoffman, J. H.	LARC/Blanchard, R. C.	
	LARC/Jones, J. J.	19-Phys Sci, NEC

<b>NAG 1-320</b>	<b>University of Texas - Dallas</b>	<b>4688</b>
Analysis of shuttle upper atmosphere mass spectrometer (SUMS) test, calibration, and flight data		
<i>Period</i>	<i>Obligations</i>	
02/01/83-06/30/85	FY83: \$10,012	TOTAL: \$10,012
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hoffman, J. H.	LARC/Duckett, R. J.	13-Physics
	LARC/Blanchard, R. C.	

<b>NAG 5-138</b>	<b>University of Texas - Dallas</b>	<b>4689</b>
Research relative to discrete auroral arcs	plasma sheet processes associated with	
<i>Period</i>	<i>Obligations</i>	
02/01/81-06/30/83	FY83:	TOTAL: \$22,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Heikkila, W. J.	GSFC/Spencer, N. W.	31-Atmos Sci

<b>NAG 5-226</b>	<b>University of Texas - Dallas</b>	<b>4690</b>
Research relative to plasma transport across the magneto-pause		
<i>Period</i>	<i>Obligations</i>	
04/01/82-03/31/83	FY83:	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Heikkila, W. J.	GSFC/Wales, R. O.	11-Astronomy

<b>NAG 5-293</b>	<b>University of Texas - Dallas</b>	<b>4691</b>
Ionospheric processes leading to magnetospheric plasma injection from Dynamics Explorer		
<i>Period</i>	<i>Obligations</i>	
02/15/83-02/14/84	FY83: \$15,000	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Klumpar, D. M.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

<b>NAG 5-305</b>	<b>University of Texas - Dallas</b>	<b>4692</b>
Retarding potential analyzer research		
<i>Period</i>	<i>Obligations</i>	
04/01/83-03/31/84	<div> FY83: \$121,000 </div> <div> TOTAL: \$121,000 </div>	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hanson, W.	GSFC/Bullock, G. D.	19-Phys Sci, NEC

NAG 5-306		University of Texas - Dallas		4693
Ion drift meter research				
Period		Obligations		
04/01/83-03/31/84		FY83: \$129,250	TOTAL: \$129,250	
Prin. Invest.		CASE Category		
Heelis, R. A.		NASA Tech. Officer	GSFC/Bullock, G. D. 19-Phys Sci, NEC	

<b>NAG 5-366</b>	<b>University of Texas - Dallas</b>	<b>4694</b>
Research relative to plasma transport across the magnetopause		
<i>Period</i>	<i>Obligations</i>	
08/15/83-08/14/84	FY83: \$34,000	TOTAL: \$34,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Heikkila, W. J.	GSFC/Wales, R. O.	31-Atmos Sci

<b>NAGW 53</b>	<b>University of Texas - Dallas</b>	<b>4695</b>
Studies of impulsive penetration and viscous interactions		
<i>Period</i>	<i>Obligations</i>	
02/01/80-06/30/83	FY83: \$24,663	TOTAL: \$81,663
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Heikkila, W. J.	HQ-EE/Benson, R. F.	19-Phys Sci, NEC
	HQ-EE/Schmerling, E. R.	

**NASA'S UNIVERSITY PROGRAM  
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**NAS 1-17399**      **University of Texas - Dallas**      **4696**  
Support activities to maintain shuttle upper atmosphere mass spectrometer (SUMS) flight readiness  
*Period*      *Obligations*  
07/15/83-07/14/84      FY83: \$15,480      TOTAL: \$15,480  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Hoffman, J. H.      LARC/Blanchard, R. C.      LARC/Duckett, R. J.      19-Phys Sci, NEC

**NAS 5-11406**      **University of Texas - Dallas**      **4697**  
Atmosphere Explorer magnetic ion mass spectrometer  
*Period*      *Obligations*  
04/06/71-09/30/82      FY83:      TOTAL: \$2,120,973  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Hoffman, J. H.      GSFC/Bullock, G. D.      31-Atmos Sci

**NAS 5-11407**      **University of Texas - Dallas**      **4698**  
Planar ion trap experiment  
*Period*      *Obligations*  
04/06/71-09/30/82      FY83:      TOTAL: \$2,434,109  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Hanson, W. B.      GSFC/Bullock, G. D.      31-Atmos Sci

**NAS 5-24298**      **University of Texas - Dallas**      **4699**  
Retarding potential analyzer for the Dynamic Explorer  
*Period*      *Obligations*  
07/26/77-07/31/83      FY83:      TOTAL: \$538,015  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Hanson, W. B.      GSFC/Fellerman, K. D.      13-Physics  
Heelis, R. A.      GSFC/Lidston, J. M.

**NAS 5-24299**      **University of Texas - Dallas**      **4700**  
Low altitude plasma instrument for Dynamics Explorer (DE)  
*Period*      *Obligations*  
11/21/77-07/31/83      FY83:      TOTAL: \$851,561  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Winningham, J. D.      GSFC/Fellerman, K. D.      13-Physics  
Klumpar, D. M.

**NAS 5-25310**      **University of Texas - Dallas**      **4701**  
Design, development, fabrication, test and calibration of the ion velocity instrument for the San Marco spacecraft  
*Period*      *Obligations*  
09/18/78-12/31/83      FY83: \$9,000      TOTAL: \$243,664  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Hanson, W. B.      GSFC/Adkins, R. E.      13-Physics

**NAS 5-26068**      **University of Texas - Dallas**      **4702**  
Ion drift meter instrument data analysis for Dynamics Explorer  
*Period*      *Obligations*  
02/04/80-07/31/83      FY83: \$56,000      TOTAL: \$311,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Heelis, R. A.      GSFC/Bullock, G.      41-Aero Engr

**NAS 5-26070**      **University of Texas - Dallas**      **4703**  
Low attitude plasma investigation data analysis for Dynamics Explorer  
*Period*      *Obligations*  
02/10/80-07/31/84      FY83:      TOTAL: \$4,265  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Winningham, J. D.      GSFC/Hoffman, R. A.      41-Aero Engr

**NAS 5-26071**      **University of Texas - Dallas**      **4704**  
Retarding potential analyzer instrument for Dynamics Explorer  
*Period*      *Obligations*  
02/10/80-07/31/84      FY83: \$64,000      TOTAL: \$344,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Hanson, W. B.      GSFC/Bullock, G. D.      41-Aero Engr

**NAS 5-26309**      **University of Texas - Dallas**      **4705**  
MAGSAT science investigation: Investigation of the effects of external current systems on the MAGSAT data utilizing grid cell modeling techniques  
*Period*      *Obligations*  
09/15/80-11/15/82      FY83:      TOTAL: \$65,500  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Klumpar, D. M.      GSFC/Oseroff, H.      32-Geological Sci  
Kisabeth, J. L.

**NAS 8-32831**      **University of Texas - Dallas**      **4706**  
Retarding ion mass spectrometer for Dynamics Explorer  
*Period*      *Obligations*  
01/17/78-10/31/84      FY83: \$38,926      TOTAL: \$874,635  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Hanson, W. B.      MSFC/Chappell, C. R.      13-Physics  
Hoffman, J. H.      MSFC/Fields, S. A.

**NAS 8-33827**      **University of Texas - Dallas**      **4707**  
Measurement of visible and UV emissions from energetic neutral atom precipitation definition phase study  
*Period*      *Obligations*  
08/12/80-12/31/83      FY83: \$54,000      TOTAL: \$164,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Tinsley, B. A.      MSFC/Jones, C. T.      31-Atmos Sci  
Rohrbaugh, D. P.      MSFC/Ise, R.

**NAS 8-35011**      **University of Texas - Dallas**      **4708**  
Definition phase for thermal ion dynamics experiment for OPEN  
*Period*      *Obligations*  
08/26/82-11/08/83      FY83: \$49,104      TOTAL: \$70,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Higlis, R. A.      MSFC/Chappell, R.      11-Astronomy  
Holman, J. H.      MSFC/Russell, L. W.  
Hanson, W. B.

**NASW 3576**      **University of Texas - Dallas**      **4709**  
Development of a mass and energy spectrometer system for analysis of gaseous environment  
*Period*      *Obligations*  
03/15/82-09/30/86      FY83: \$119,000      TOTAL: \$279,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Hoffman, J. H.      HQ-EL/Brunk, W. E.      11-Astronomy  
HQ-EL/Brinton, H. C.

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<b>NGL 44-004-026</b>	<b>University of Texas - Dallas</b>		<b>4710</b>
	Investigations into the mechanism and rates of atmospheric mixing in the lower thermosphere		
	<i>Period</i>	<i>Obligations</i>	
	05/05/65-04/30/84	FY83: \$102,000 TOTAL: \$2,946,573	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hanson, W. B.	HQ-EL/Brinton, H. C.	31-Atmos Sci
		HQ-EL/Brunk, W. E.	
<b>NGL 44-004-130</b>	<b>University of Texas - Dallas</b>		<b>4711</b>
	Selected studies in the space sciences		
	<i>Period</i>	<i>Obligations</i>	
	03/17/72-03/31/84	FY83: TOTAL: \$2,300,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hanson, W. B.	HQ-E/Gaskins, M. A.	99-Multi-Discip
	McClure, J. P.	HQ-E/Devlin, J.	
	Hodges, R. R.		
<b>NGR 44-004-120</b>	<b>University of Texas - Dallas</b>		<b>4712</b>
	Rocket probes for the upper F-region		
	<i>Period</i>	<i>Obligations</i>	
	02/09/71-01/31/84	FY83: \$100,000 TOTAL: \$1,425,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hanson, W. B.	HQ-EE/Lynch, J. T.	31-Atmos Sci
		HQ-EE/Wiskerchen, M. J.	
<b>NSG 5085</b>	<b>University of Texas - Dallas</b>		<b>4713</b>
	Particle spectrometer on board ISIS-2		
	<i>Period</i>	<i>Obligations</i>	
	11/01/75-06/30/84	FY83: \$30,000 TOTAL: \$275,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Heikkila, W. J.	GSFC/Brace, L. H.	31-Atmos Sci
	Klumpar, D. M.		
<b>NSG 5087</b>	<b>University of Texas - Dallas</b>		<b>4714</b>
	Ion composition research on ISIS-2		
	<i>Period</i>	<i>Obligations</i>	
	12/01/75-10/31/84	FY83: \$25,000 TOTAL: \$215,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hoffman, J. H.	GSFC/Brace, L. H.	31-Atmos Sci
	Dodson, W. H.		
<b>NSG 5280</b>	<b>University of Texas - Dallas</b>		<b>4715</b>
	Electrodynamic coupling in the ionosphere magnetosphere system		
	<i>Period</i>	<i>Obligations</i>	
	07/01/78-12/31/82	FY83: TOTAL: \$73,535	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Klumpar, D. M.	GSFC/Spencer, N. W.	31-Atmos Sci
<b>NSG 7034</b>	<b>University of Texas - Dallas</b>		<b>4716</b>
	Investigation of the daytime lunar atmosphere for lunar synthesis program		
	<i>Period</i>	<i>Obligations</i>	
	04/01/74-12/31/82	FY83: TOTAL: \$399,133	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hodges, R. R., Jr.	HQ-EL/Quaide, W. L.	31-Atmos Sci
<b>NSG 7599</b>	<b>University of Texas - Dallas</b>		<b>4717</b>
	Continued analysis of data from the Viking retarding potential analyzer (RPA's)		
	<i>Period</i>	<i>Obligations</i>	
	03/01/79-12/31/81	FY83: \$451 TOTAL: \$50,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hanson, W. B.	HQ-EL/Murphy, R. E.	31-Atmos Sci
		HQ-EL/Brunk, W. E.	
<b>NAGW 204</b>	<b>University of Texas - El Paso</b>		<b>4718</b>
	A theoretical model study of tidal stress and other heating mechanisms of Io		
	<i>Period</i>	<i>Obligations</i>	
	05/20/81-08/20/82	FY83: TOTAL: \$34,626	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Lawson, J. O.	HQ-EL/Quaide, W. L.	13-Physics
	Bruce, R. E.	HQ-LC/Pohly, J. G.	
<b>NAS 5-26326</b>	<b>University of Texas - El Paso</b>		<b>4719</b>
	Application of MAGSAT to lithospheric modeling in South America; Synthesis of geologic and seismic data for development of integrated crustal models for development of integrated crustal models		
	<i>Period</i>	<i>Obligations</i>	
	10/02/80-09/02/83	FY83: TOTAL: \$50,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Keller, E. R.	GSFC/Oseroff, H.	32-Geological Sci
	Lidiak, E. G.		
<b>NAG 2-26 Univ of Texas Medical Branch - Galveston</b>			<b>4720</b>
	Central otolith mechanisms in non-human primates		
	<i>Period</i>	<i>Obligations</i>	
	01/01/80-12/31/83	FY83: \$53,500 TOTAL: \$178,603	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Perachio, A. A.	ARC/Daunton, N. G.	51-Biological Sci
	Carreta, M. J.		
<b>NAG 2-183 Univ of Texas Medical Branch - Galveston</b>			<b>4721</b>
	Space platform science conferences		
	<i>Period</i>	<i>Obligations</i>	
	04/01/82-05/31/83	FY83: TOTAL: \$45,826	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Fabricant, J. D.	ARC/Gomersall, E. W.	59-Life Sci, NEC
<b>NAG 2-186 Univ of Texas Medical Branch - Galveston</b>			<b>4722</b>
	Investigations of otolith responses using ground based vestibular research facility		
	<i>Period</i>	<i>Obligations</i>	
	07/01/82-06/30/84	FY83: \$60,000 TOTAL: \$123,582	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Corrigia, M. J.	ARC/Davinton, N. G.	51-Biological Sci
	Perachio, A. A.		
	Anderson, D. J.		

**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

**NAS 2-10502 Univ of Texas Medical Branch - Galveston 4723**

Anatomical and electrophysiological studies of the effects of weightlessness on the vestibular apparatus of the gerbil

Period	Obligations	
01/17/80-01/18/82	FY83:	TOTAL: \$36,905
Prin. Invest.	NASA Tech. Officer	CASE Category
Correia, M. J.	ARC/Ferandin, J.	51-Biological Sci
	ARC/Donaldson, R.	

**NAS 5-25897 Univ of Texas Medical Branch - Galveston 4724**

Earth strain measurements with transportable laser ranging system: Field techniques and planning laser geodynamics

Period	Obligations	
12/14/79-02/14/83	FY83:	TOTAL: \$55,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Nakamura, Y.	GSFC/Stephanides, C. C.	32-Geological Sci

**NAS 9-14641 Univ of Texas Medical Branch - Galveston 4725**

Analysis of spontaneous vestibular primary afferent discharge following application of drugs

Period	Obligations	
05/01/75-03/31/84	FY83: \$75,000	TOTAL: \$432,850
Prin. Invest.	NASA Tech. Officer	CASE Category
Correia, M. J.	JSC/Reschke, M. F.	69-Psych, NEC

**NGT 44-088-800 Univ of Texas Medical Branch - Galveston 4726**

Graduate student researchers program

Period	Obligations	
09/01/81-08/31/84	FY83: \$10,900	TOTAL: \$36,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Correia, M. J.	HQ-LB/Owens, F. C.	51-Biological Sci

**NAGW 140 Univ of Texas, Health Sci Ctr-Dallas 4727**

Influence of suspension-hypokinesia on skeletal/ muscle

Period	Obligations	
02/01/81-01/31/84	FY83: \$50,000	TOTAL: \$156,499
Prin. Invest.	NASA Tech. Officer	CASE Category
Templeton, G. H.	HQ-EB/Halstead, T. W.	51-Biological Sci
Sutko, J. L.		

**NAS 9-16044 Univ of Texas, Health Sci Ctr-Dallas 4728**

Cardiovascular adaption to zero gravity

Period	Obligations	
01/17/80-10/31/86	FY83: \$376,000	TOTAL: \$476,466
Prin. Invest.	NASA Tech. Officer	CASE Category
Blomquist, C. G.	JSC/Lintott, J.	59-Life Sci, NEC

**NSG 9026 Univ of Texas, Health Sci Ctr-Dallas 4729**

Cardiovascular effect of variations in habitual levels of physical activity

Period	Obligations	
03/01/75-05/31/84	FY83: \$49,792	TOTAL: \$501,722
Prin. Invest.	NASA Tech. Officer	CASE Category
Blomquist, C. G.	JSC/Bungo, M.	56-Medical Sciences

**NAG 2-239 Univ. of Texas-Hlth Science Ctr-Houston 4730**

Biochemical adaptations of anti-gravity muscle fibers to disuse atrophy

Period	Obligations	
07/01/83-06/30/84	FY83: \$58,199	TOTAL: \$58,199
Prin. Invest.	NASA Tech. Officer	CASE Category
Booth, F. W.	ARC/Ellis, S.	51-Biological Sci

**NAG 9-23 Univ. of Texas-Hlth Science Ctr-Houston 4731**

The factors determining the incidence of limb bends upon decompression to altitude

Period	Obligations	
04/01/82-03/31/84	FY83: \$50,000	TOTAL: \$107,517
Prin. Invest.	NASA Tech. Officer	CASE Category
Hills, B. A.	JSC/Waligora, J.	51-Biological Sci

**NAGW 438 Univ. of Texas-Hlth Science Ctr-Houston 4732**

Growth and differentiation of mammalian embryonic tissues exposed to hypergravity in vitro and in vivo

Period	Obligations	
03/01/83-02/28/84	FY83: \$41,880	TOTAL: \$41,880
Prin. Invest.	NASA Tech. Officer	CASE Category
Duke, P. J.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NAS 9-15388 Univ. of Texas-Hlth Science Ctr-Houston 4733**

Biochemical adaptation of antigravity muscle fibers to disuse atrophy

Period	Obligations	
08/01/77-11/15/81	FY83:	TOTAL: \$116,350
Prin. Invest.	NASA Tech. Officer	CASE Category
Booth, F.	JSC/Smith, M.	51-Biological Sci

**NAS 9-16478 Univ. of Texas-Hlth Science Ctr-Houston 4734**

Biochemical adaptations of anti-gravity muscle fibers to disuse atrophy

Period	Obligations	
02/24/82-10/31/83	FY83: \$35,000	TOTAL: \$67,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Booth, F. W.	JSC/Cintron-trevino, N.	51-Biological Sci

**NAS 9-16688 Univ. of Texas-Hlth Science Ctr-Houston 4735**

Long term bedrest in the study of calcium dynamics

Period	Obligations	
09/28/82-06/15/83	FY83: \$50,000	TOTAL: \$145,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Frost, W.	JSC/Johnson, P.	56-Medical Sciences

**NAG 9-5 Univ of Texas-Hlth Sci Ctr-San Antonio 4736**

The effect of stress on human blood platelets

Period	Obligations	
03/01/80-06/30/84	FY83: \$50,000	TOTAL: \$204,000
Prin. Invest.	NASA Tech. Officer	CASE Category
George, J. N.	JSC/Leach, C. S.	56-Medical Sciences

# **NASA'S UNIVERSITY PROGRAM** **TEXAS (Continued)**

**NAS 9-16366 Univ of Texas-Hlth Sci Ctr-San Antonio 4737**  
Quantitation of renal prostaglandins

Period	Obligations	
04/27/81-07/01/84	FY83: \$47,500	TOTAL: \$117,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Lifschitz, M.	JSC/Leach, C.	56-Medical Sciences

## **UTAH**

**NAG 1-391 Brigham Young University 4738**  
Development of raster graphics subroutine package

Period	Obligations	
08/01/83-01/31/84	FY83: \$24,823	TOTAL: \$24,823
Prin. Invest.	NASA Tech. Officer	CASE Category
Stephenson, M. B.	LARC/Speray, D. E.	22-Computer Science
	LARC/Hogge, J. E.	

**NAG 2-145 Brigham Young University 4739**  
Pioneer 10 and 11 (Jupiter and Saturn) magnetometer experiments

Period	Obligations	
01/01/82-10/31/83	FY83: \$30,000	TOTAL: \$55,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Jones, D. E.	ARC/Fimmel, R. O.	19-Phys Sci, NEC

**NAS 2-7358 Brigham Young University 4740**  
Pioneer F/G data analysis of the solar terrestrial relations portion of the magnetic field experiment

Period	Obligations	
00/00/00-12/31/81	FY83:	TOTAL: \$96,108
Prin. Invest.	NASA Tech. Officer	CASE Category
Jones, D. E.	ARC/Fimmel, R. O.	13-Physics
	ARC/Dyer, J.	

**NAS 5-26473 Brigham Young University 4741**  
Heat capacity mapping mission (HCMM) data continuing schematic design and scientific applications and FDT support

Period	Obligations	
02/24/81-02/23/82	FY83:	TOTAL: \$26,464
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, W.	GSFC/Gordon, F.	39-Env Sci, NEC

**NAG 1-283 University of Utah 4742**  
Acoustic propagation in a thermally stratified atmosphere

Period	Obligations	
07/01/82-06/30/84	FY83: \$48,220	TOTAL: \$89,320
Prin. Invest.	NASA Tech. Officer	CASE Category
Van Moorhem, W. K.	LARC/Willshire, W. L., Jr.	13-Physics
	LARC/Zorunski, W. E.	

**NAG 2-108 University of Utah 4743**  
Mechanisms of action of glucocorticosteroids and fluoride ion on the growing skeleton

Period	Obligations	
05/01/81-12/31/83	FY83: \$108,000	TOTAL: \$286,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Jee, W. S.	ARC/Young, D. R.	51-Biological Sci
Woodbury, D. M.		

**NAG 3-27 University of Utah 4744**  
Carbon-13 NMR analysis of shale oils and shale oil derived jet fuels

Period	Obligations	
03/01/80-02/25/84	FY83: \$99,497	TOTAL: \$355,351
Prin. Invest.	NASA Tech. Officer	CASE Category
Ursenbach, W. O.	LERC/Seng, G. T.	12-Chemistry
Pugmire, R. J.		

**NAG 3-327 University of Utah 4745**  
Backward-wave oscillators for the frequency range from 600 GHz to 1800 GHz

Period	Obligations	
10/30/82-10/29/83	FY83: \$150,000	TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Grow, R. W.	LERC/Heighway, J.	45-Elec Engr
	LERC/Stankiewicz, N.	

**NAG 5-127 University of Utah 4746**  
Global scale diagnosis of satellite data

Period	Obligations	
07/01/81-02/29/84	FY83: \$48,000	TOTAL: \$120,864
Prin. Invest.	NASA Tech. Officer	CASE Category
Paegle, J. N.	GSFC/Kalnay, E.	31-Atmos Sci

**NAG 5-164 University of Utah 4747**  
Study of tectonic activity in the basin and range province and the San Andres Fault system

Period	Obligations	
04/15/81-11/30/83	FY83:	TOTAL: \$55,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, R. B.	GSFC/Lowman, P. D.	32-Geological Sci

**NAG 6-15 University of Utah 4748**  
Development work on meteorological data processing firmware

Period	Obligations	
05/15/81-11/30/82	FY83:	TOTAL: \$77,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Staffanson, F. L.	GSFC/Snyder, R. V.	19-Phys Sci, NEC
	WFC/West, W. W.	

**NAGW 82 University of Utah 4749**  
An experimental investigation of the angular scattering and backscattering behavior of the simulated clouds of the outer planets

Period	Obligations	
06/01/80-03/31/84	FY83: \$20,000	TOTAL: \$93,687
Prin. Invest.	NASA Tech. Officer	CASE Category
Sassen, K.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 95 University of Utah 4750**  
Identifying environmental features for land management decisions

Period	Obligations	
08/01/80-08/31/85	FY83:	TOTAL: \$300,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ursenbach, W. O.	HQ-EL/Tuyahov, A. J.	39-Env Sci, NEC
Ridd, M. K.		

**NASA'S UNIVERSITY PROGRAM**  
**UTAH (Continued)**

**NAGW 260** **University of Utah** **4751**  
Support of Yosemite conference on origins of plasmas and electric fields in the magnetosphere  
*Period* *Obligations*  
11/01/81-03/31/82 FY83: TOTAL: \$10,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sojka, J. J. HQ-EZ/Lynch, J. T. 13-Physics  
HQ-EZ/Schmerling, E. R.

**NAGW 416** **University of Utah** **4752**  
Irregular satellites Trojan asteroids, and other unusual minor planets  
*Period* *Obligations*  
02/01/83-01/31/84 FY83: \$9,985 TOTAL: \$9,985  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shorthill, R. W. HQ-EL/Brunk, W. E. 11-Astronomy  
HQ-EL/Brinton, H. C.

**NAGW 491** **University of Utah** **4753**  
The study of lunar subsurface features  
*Period* *Obligations*  
07/01/83-05/31/84 FY83: \$14,981 TOTAL: \$14,981  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shorthill, R. W. HQ-EL/Williams, R. J. 32-Geological Sci  
HQ-EL/French, B. M.

**NAS 8-35346** **University of Utah** **4754**  
Pattern recognition for space applications using fuzzy mathematics  
*Period* *Obligations*  
05/02/83-12/01/83 FY83: \$15,000 TOTAL: \$15,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Grnderson, R. T. MSFC/Singley, M. E. 29-Math/Computer, NEC

**NGT 45-003-800** **University of Utah** **4755**  
Graduate student researchers program  
*Period* *Obligations*  
06/01/81-05/31/83 FY83: TOTAL: \$23,200  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nielson, H. C. HQ-LB/Carter, C. H. 61-Biol Aspects

**NGT 45-003-801** **University of Utah** **4756**  
Graduate student researchers program  
*Period* *Obligations*  
06/01/82-05/31/84 FY83: \$11,700 TOTAL: \$22,290  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kyriakides, S. HQ-LB/Owens, F. C. 59-Life Sci, NEC

**NGT 45-003-802** **University of Utah** **4757**  
NASA graduate student researchers program  
*Period* *Obligations*  
06/01/83-05/31/84 FY83: \$11,740 TOTAL: \$11,740  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McCoy, R. M. HQ-LB/Owens, F. C. 32-Geological Sci

**NSG 1534** **University of Utah** **4758**  
Fluid dynamics of crystallization from vapors  
*Period* *Obligations*  
06/01/78-09/30/83 FY83: \$83,193 TOTAL: \$463,898  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rosenberger, F. E. LARC/Fripp, A. L. 47-Materials Engr  
LARC/Crouch, R. K.

**NSG 7226** **University of Utah** **4759**  
Identifying environmental features for land management decisions  
*Period* *Obligations*  
08/01/76-07/31/82 FY83: TOTAL: \$500,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ridd, M. K. HQ-ET/Vitale, J. A. 39-Env Sci, NEC

**NAG 5-603** **Utah State University** **4760**  
Experimental studies of turbulent electrostatic waves in equatorial spread F, the equatorial electrojet and in two active space plasma events  
*Period* *Obligations*  
03/01/82-02/29/84 FY83: \$56,990 TOTAL: \$97,687  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Baker, K. D. GSFC/Early, L. J. 13-Physics  
Burt, D. A. GSFC/Pless, R. H.  
Ulwick, J. C.

**NAG 5-607** **Utah State University** **4761**  
Sounding rocket experiments using tethered payloads  
*Period* *Obligations*  
07/01/82-12/31/83 FY83: \$30,000 TOTAL: \$89,522  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Raitt, W. J. GSFC/Early, L. J. 13-Physics  
Williamson, P. R. GSFC/Pless, R. H.  
Parish, J. L.

**NAG 8-17** **Utah State University** **4762**  
Thermal ion dynamics experiment (TIDE): An investigation of low energy (0-100cv) ions on the PPL and EML spacecraft of the OPEN mission  
*Period* *Obligations*  
08/30/82-11/14/83 FY83: TOTAL: \$2,462  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Raitt, W. J. MSFC/Chappell, C. R. 11-Astronomy

**NAGW 77** **Utah State University** **4763**  
The flow of plasma in the solar terrestrial environment  
*Period* *Obligations*  
07/01/80-06/30/84 FY83: \$195,000 TOTAL: \$667,400  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schunk, R. W. HQ-EE/Butler, D. M. 39-Env Sci, NEC

**NAGW 105** **Utah State University** **4764**  
A study of magnetospheric/ionospheric/atmospheric coupling via energetic heavy ions  
*Period* *Obligations*  
11/01/80-01/31/84 FY83: \$34,999 TOTAL: \$103,999  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, M. R. HQ-EE/Lynch, J. T. 19-Phys Sci, NEC  
HQ-EE/Wiskewchen, M. J.

# NASA'S UNIVERSITY PROGRAM

## UTAH (Continued)

**NAGW 119** **Utah State University** **4765**  
Innovative projects in electromagnetism  
*Period* *Obligations*  
11/15/80-05/14/83 FY83: TOTAL: \$151,465  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, D. G. HQ-EP/Taylor, T. C. 13-Physics  
Edwards, W. F. HQ-EP/Heninger, L. W.

**NAGW 345** **Utah State University** **4766**  
Definition studies into the reflight of the imaging spectrometric observatory for the studies of trace constituents in the middle atmosphere  
*Period* *Obligations*  
06/15/82-06/14/83 FY83: \$38,269 TOTAL: \$95,347  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, D. G. HQ-EE/Esenwein, G. F. 31-Atmos Sci  
HQ-EE/Watson, R. T.

**NAGW 354** **Utah State University** **4767**  
Balloon-borne stratosphere ultraviolet imagery equipment  
*Period* *Obligations*  
05/01/82-06/30/83 FY83: \$20,893 TOTAL: \$105,893  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, M. R. HQ-EE/Watson, R. T. 31-Atmos Sci  
HQ-EE/Hilsenrath, E.

**NAGW 406** **Utah State University** **4768**  
Studies of thermospheric vibrationally excited n2 and molecular constituents and the F region winter anomaly  
*Period* *Obligations*  
11/01/82-10/30/83 FY83: \$40,000 TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, D. G. HQ-EE/Lynch, J. T. 12-Chemistry  
HQ-EE/Schmerling, E. R.

**NAS 5-24455** **Utah State University** **4769**  
Investigations of vehicle charging and potential (VCAP) on orbital flight test four experiment  
*Period* *Obligations*  
03/01/78-09/30/83 FY83: \$68,592 TOTAL: \$1,673,292  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Long, D. GSFC/Eiband, A. M. 13-Physics  
Fishell, R. E.

**NAS 5-26171** **Utah State University** **4770**  
Study of the imaging stratospheric ultraviolet spectrometer for the upper atmosphere research satellite (UARS)  
*Period* *Obligations*  
09/24/80-12/31/81 FY83: \$15,426 TOTAL: \$347,342  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, D. G. GSFC/Browne, W. H., Jr. 31-Atmos Sci

**NAS 5-26849** **Utah State University** **4771**  
Conduct a definitization phase of the auroral images of magnetospheric energy for the OPEN project  
*Period* *Obligations*  
05/24/82-09/15/84 FY83: \$130,751 TOTAL: \$216,751  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, M. R. GSFC/O'Brien, J. J. 19-Phys Sci, NEC

**NAS 8-33992** **Utah State University** **4772**  
Development, integration, mission support and data analysis of the imaging spectrometric observatory experiment for Spacelab mission I  
*Period* *Obligations*  
07/25/80-06/30/84 FY83: \$463,000 TOTAL: \$1,282,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, M. R. MSFC/Jones, C. T. 31-Atmos Sci  
MSFC/Ise, R.

**NAS 9-14871** **Utah State University** **4773**  
Higher plant response to elevated ultraviolet irradiance  
*Period* *Obligations*  
10/08/75-12/31/81 FY83: TOTAL: \$515,042  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Caldwell, M. M. JSC/Nachtwey, D. S. 54-Env Biology

**NCC 2-139** **Utah State University** **4774**  
Studies on maximum yield of wheat and other small grains in controlled environments  
*Period* *Obligations*  
05/01/81-04/30/84 FY83: \$68,000 TOTAL: \$211,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Salisbury, F. B. ARC/Malefroy, R. D. 51-Biological Sci  
Albrechtson, R.

**NSG 5215** **Utah State University** **4775**  
Studies of high latitude ion dynamics  
*Period* *Obligations*  
10/01/77-04/30/82 FY83: TOTAL: \$67,269  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
St Maurice, J. P. GSFC/Spencer, N. W. 13-Physics  
Banks, P. M.  
Sojka, J.

**NSG 7038** **Utah State University** **4776**  
The diagenesis of geologically important organic matter and amino acids under simulated natural conditions  
*Period* *Obligations*  
06/01/74-12/31/84 FY83: \$22,000 TOTAL: \$542,319  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Smith, G. G. HQ-EB/Devincenzi, D. L. 11-Astronomy

**NSG 7567** **Utah State University** **4777**  
An examination of the clinostat problem using leafy plants  
*Period* *Obligations*  
07/01/71-11/30/83 FY83: TOTAL: \$136,442  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Salisbury, F. B. HQ-EB/Halstead, T. W. 51-Biological Sci

## VERMONT

**NAG 8-389** **Middlebury College** **4778**  
Investigations of the Puppis A X-ray emission line spectrum  
*Period* *Obligations*  
12/08/80-12/31/83 FY83: TOTAL: \$47,023  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Winkler, P. F., Jr. MSFC/Stone, J. F. 11-Astronomy



# **NASA'S UNIVERSITY PROGRAM** **VERMONT (Continued)**

**NAGW 54** **Middlebury College** **4779**  
Structure of field rotating disturbances in warm plasma  
*Period* *Obligations*  
03/01/80-02/28/83 FY83: TOTAL: \$10,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wolfson, L. T. HQ-EE/Wiskerchen, M. J. 19-Phys Sci, NEC

**NAG 1-144** **College of William And Mary** **4786**  
Liquid crystallinity in semi-rigid polymers and in model compounds  
*Period* *Obligations*  
02/15/81-08/31/83 FY83: TOTAL: \$64,869  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Orwoll, R. A. LARC/Stclair, T. L. 12-Chemistry

**NAS 5-27534** **Univ of Vermont & St Agricultural Col.** **4780**  
A report on application of LANDSAT digital analysis to meet the information needs of the state of New Hampshire  
*Period* *Obligations*  
12/28/82-12/27/83 FY83: \$17,762 TOTAL: \$17,762  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Smith, G. S. GSFC/Blodget, H. 39-Env Sci, NEC  
GSFC/Kerber, A. G.

**NAG 1-209** **College of William And Mary** **4787**  
Optimal attitude reorientation of space vehicles  
*Period* *Obligations*  
08/11/81-12/31/82 FY83: TOTAL: \$15,566  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rublein, G. T. LARC/Price, D. B. 42-Astro Engr

**NSG 7453** **Univ of Vermont & St Agricultural Col.** **4781**  
Development of a remote sensing applications program in Vermont  
*Period* *Obligations*  
06/01/78-05/31/85 FY83: \$125,000 TOTAL: \$800,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Whitmore, R. A. HQ-EL/Tuyahov, A. J. 39-Env Sci, NEC

**NAG 1-237** **College of William And Mary** **4788**  
Characterization of relationship of cure cycle processing properties  
*Period* *Obligations*  
12/01/81-11/30/83 FY83: \$69,764 TOTAL: \$131,655  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kranbuehl, D. E. LARC/Freeman, W. T., Jr. 12-Chemistry  
LARC/Nelson, J. B.

## **VIRGINIA**

**NAG 1-268** **Christopher Newport College** **4782**  
Bacterial electrochemical asymmetry potential (BEAP)  
*Period* *Obligations*  
05/11/82-05/10/84 FY83: TOTAL: \$13,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sacks, L. J. LARC/Rhinehart, R. P. 12-Chemistry

**NAG 1-360** **College of William And Mary** **4789**  
Expert database management system  
*Period* *Obligations*  
08/16/83-05/31/84 FY83: \$31,968 TOTAL: \$31,968  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Feyock, S. LARC/Shipman, F. S. 22-Computer Science  
LARC/Shoosmith, J. N.

**NSG 1514** **Christopher Newport College** **4783**  
An investigation of semiconductor electrodes  
*Period* *Obligations*  
09/01/78-10/31/83 FY83: \$39,000 TOTAL: \$173,737  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Buoncrisiani, A. M. LARC/Byvik, C. E. 13-Physics  
Smith, B. T. LARC/Conway, E. J.

**NAG 3-232** **College of William And Mary** **4790**  
A high order language for a system of closely coupled processing elements  
*Period* *Obligations*  
12/15/81-12/13/83 FY83: TOTAL: \$112,547  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Feyock, S. LERC/Arpasi, D. J. 22-Computer Science  
Collins, W. R. LERC/Szuch, J. R.

**NSG 1614** **Christopher Newport College** **4784**  
Theoretical study of radiation effects in composite materials for space use  
*Period* *Obligations*  
07/01/79-05/09/84 FY83: \$12,527 TOTAL: \$153,002  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Chang, C. K. LARC/Wilson, J. W. 19-Phys Sci, NEC  
LARC/Conway, E. J.

**NCC 1-3** **College of William And Mary** **4791**  
Atmos Spacelab science investigation  
*Period* *Obligations*  
05/01/79-09/30/82 FY83: TOTAL: \$78,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rinsland, C. P. LARC/Sullivan, E. M. 31-Atmos Sci  
LARC/Russell, J. M., III

**NAG 1-109** **College of William And Mary** **4785**  
Numerical methods for viscous flows  
*Period* *Obligations*  
11/01/80-06/30/83 FY83: \$31,100 TOTAL: \$104,204  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Zang, T. A. LARC/Kumar, A. 41-Aero Engr  
LARC/Dwoyer, D. L.

**NCC 1-16** **College of William And Mary** **4792**  
Analysis of remote sensors for pollution  
*Period* *Obligations*  
08/01/79-06/30/83 FY83: TOTAL: \$48,361  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rinsland, C. P. LARC/Seals, R. K. 31-Atmos Sci  
LARC/Russell, J. M.

**NASA'S UNIVERSITY PROGRAM  
VIRGINIA (Continued)**

<b>NCC 1-40</b>	<b>College of William And Mary</b>	<b>4793</b>	Tire nonlinear model <i>Period</i> 04/16/80-11/15/83 <i>Prin. Invest.</i> Anderson, C. M.	<i>Obligations</i> FY83: \$60,959 NASA Tech. Officer LARC/Tanner, J. A.	<i>TOTAL: \$247,894</i> <i>CASE Category</i> 46-Mech Engr
<b>NSG 1435</b>	<b>College of William And Mary</b>	<b>4800</b>	Development of a multi-target compiler writing system <i>Period</i> 07/11/77-11/30/83 <i>Prin. Invest.</i> Noonan, R. E. Collins, W. R.	<i>Obligations</i> FY83: \$13,098 NASA Tech. Officer LARC/Senn, E. H. LARC/Voigt, S. J.	<i>TOTAL: \$412,625</i> <i>CASE Category</i> 21-Mathematics
<b>NCC 1-43</b>	<b>College of William And Mary</b>	<b>4794</b>	Halogen occultation experiment (HALOE) science investigation <i>Period</i> 08/01/80-12/31/83 <i>Prin. Invest.</i> Benner, D. C.	<i>Obligations</i> FY83: \$50,000 NASA Tech. Officer LARC/Sullivan, E. M. LARC/Russell, J. M.	<i>TOTAL: \$124,352</i> <i>CASE Category</i> 31-Atmos Sci
<b>NSG 1625</b>	<b>College of William And Mary</b>	<b>4801</b>	Methodologies for optimizing maintenance models for advanced avionics control systems <i>Period</i> 09/01/79-08/31/84 <i>Prin. Invest.</i> Schaefer, M. K.	<i>Obligations</i> FY83: NASA Tech. Officer LARC/Finelli, G. B.	<i>TOTAL: \$112,622</i> <i>CASE Category</i> 49-Engr, NEC
<b>NCC 1-61</b>	<b>College of William And Mary</b>	<b>4795</b>	Advanced concepts in solar occultation remote sensing <i>Period</i> 01/05/82-10/15/84 <i>Prin. Invest.</i> Rinsland, C. P.	<i>Obligations</i> FY83: NASA Tech. Officer LARC/Seals, R. K. LARC/Sullivan, E. M.	<i>TOTAL: \$77,814</i> <i>CASE Category</i> 31-Atmos Sci
<b>NSG 1626</b>	<b>College of William And Mary</b>	<b>4802</b>	Investigation of portability techniques for a large flight-oriented programming language <i>Period</i> 06/01/79-08/31/84 <i>Prin. Invest.</i> Feyock, S.	<i>Obligations</i> FY83: NASA Tech. Officer LARC/Foudriat, E. C. LARC/Will, R. W.	<i>TOTAL: \$143,645</i> <i>CASE Category</i> 22-Computer Science
<b>NCC 1-77</b>	<b>College of William And Mary</b>	<b>4796</b>	Computational investigations of heterogeneous processes <i>Period</i> 03/01/83-02/28/85 <i>Prin. Invest.</i> Krakauer, H.	<i>Obligations</i> FY83: \$81,325 NASA Tech. Officer LARC/Phillips, D. H.	<i>TOTAL: \$81,325</i> <i>CASE Category</i> 19-Phys Sci, NEC
<b>NCC 1-78</b>	<b>College of William And Mary</b>	<b>4797</b>	Multidimensional scaling approach to workload assessment in pilots <i>Period</i> 03/16/83-10/31/83 <i>Prin. Invest.</i> Null, C. H. Bloch, R. M.	<i>Obligations</i> FY83: \$39,837 NASA Tech. Officer LARC/Pope, A. T.	<i>TOTAL: \$39,837</i> <i>CASE Category</i> 69-Psych, NEC
<b>NAS 5-26952</b>	<b>George Mason University</b>	<b>4804</b>	Human factors analysis support for needs program <i>Period</i> 02/18/82-02/04/83 <i>Prin. Invest.</i> Mitchell, C. M. Bocast, A. K.	<i>Obligations</i> FY83: NASA Tech. Officer GSFC/Moe, K. L. GSFC/Truskowski, W. F.	<i>TOTAL: \$97,740</i> <i>CASE Category</i> 12-Chemistry
<b>NCC 1-80</b>	<b>College of William And Mary</b>	<b>4798</b>	High resolution spectroscopy to support atmospheric measurements <i>Period</i> 07/07/83-01/06/84 <i>Prin. Invest.</i> Benner, D. C.	<i>Obligations</i> FY83: \$27,410 NASA Tech. Officer LARC/Smith, M. A. LARC/Rogowski, R. S.	<i>TOTAL: \$27,410</i> <i>CASE Category</i> 13-Physics
<b>NAS 5-27255</b>	<b>George Mason University</b>	<b>4805</b>	Analytical and simulation support of the mission planning process for the multisatellite operations <i>Period</i> 06/17/82-08/15/83 <i>Prin. Invest.</i> Greenland, A. Mitchell, C.	<i>Obligations</i> FY83: NASA Tech. Officer GSFC/Ondrus, P. J. GSFC/Koslosky, J. T.	<i>TOTAL: \$32,215</i> <i>CASE Category</i> 29-Math/Cmputer, NEC
<b>NSG 1095</b>	<b>College of William And Mary</b>	<b>4799</b>	Molecular weight-property relationships of high performance polymers used for adhesives and composites <i>Period</i> 09/01/74-02/28/82 <i>Prin. Invest.</i> Kranbuehl, D. E.	<i>Obligations</i> FY83: NASA Tech. Officer LARC/Johnston, N. J. LARC/Burks, H. D.	<i>TOTAL: \$110,482</i> <i>CASE Category</i> 12-Chemistry
<b>NAS 5-27587</b>	<b>George Mason University</b>	<b>4806</b>	Comprehensive analysis, design, and proof-of concept implementation services in human factors research and development <i>Period</i> 02/16/83-02/16/85 <i>Prin. Invest.</i> Mitchell, C. M.	<i>Obligations</i> FY83: \$190,020 NASA Tech. Officer GSFC/Truskowski, W. F.	<i>TOTAL: \$190,020</i> <i>CASE Category</i> 22-Computer Science

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

<p><b>NAG 1-87</b> <b>Hampton Institute</b> <b>4807</b> Local effects of partly cloudy skies on solar and emitted radiation <i>Period</i> <i>Obligations</i> 08/01/80-09/30/83 FY83: \$25,660 TOTAL: \$379,672 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Venable, D. D. LARC/Whitlock, C. H. 31-Atmos Sci Whitney, D. A. LARC/Suttles, J. T.</p>	<p><b>NCC 1-11</b> <b>Hampton Institute</b> <b>4814</b> Radiative transfer model for remote sensing of laser-induced fluorescence of phytoplankton in non-homogeneous turbid waters <i>Period</i> <i>Obligations</i> 05/01/79-09/30/82 FY83: TOTAL: \$67,328 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Venable, D. D. LARC/Poole, L. R. 39-Env Sci, NEC</p>
<p><b>NAG 1-122</b> <b>Hampton Institute</b> <b>4808</b> Absorption of humic acids and trace metals in natural waters <i>Period</i> <i>Obligations</i> 12/01/80-11/30/82 FY83: TOTAL: \$58,129 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Leung, W. H. LARC/Harris, R. C. 39-Env Sci, NEC LARC/Whitlock, C. H.</p>	<p><b>NGT 47-020-800</b> <b>Hampton Institute</b> <b>4815</b> Summer faculty fellowship program in research <i>Period</i> <i>Obligations</i> 01/01/82-12/31/83 FY83: TOTAL: \$277,832 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Spencer, J. H. HQ-LB/Carter, C. H. 49-Engr, NEC</p>
<p><b>NAG 1-400</b> <b>Hampton Institute</b> <b>4809</b> Advanced solar energetics <i>Period</i> <i>Obligations</i> 09/01/83-08/31/84 FY83: \$163,018 TOTAL: \$163,018 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Venable, D. D. LARC/Conway, E. J. 13-Physics LARC/Williams, M. D.</p>	<p><b>NGT 47-020-801</b> <b>Hampton Institute</b> <b>4816</b> Graduate student researchers program <i>Period</i> <i>Obligations</i> 05/01/82-04/30/84 FY83: \$12,500 TOTAL: \$23,000 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Venable, D. D. HQ-LB/Owens, F. C. 13-Physics</p>
<p><b>NAG 1-415</b> <b>Hampton Institute</b> <b>4810</b> Solution of some problems in applied mathematics using MACSYMA <i>Period</i> <i>Obligations</i> 10/01/83-09/30/84 FY83: \$258,879 TOTAL: \$258,879 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Shah, S. N. LARC/Shoosmith, J. N. 29-Math/Cmputer,NEC</p>	<p><b>NSG 1595</b> <b>Hampton Institute</b> <b>4817</b> Studies of new media for radiation induced lasers <i>Period</i> <i>Obligations</i> 02/01/79-02/29/84 FY83: TOTAL: \$164,143 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Han, K. S. LARC/Jalufka, N. W. 13-Physics LARC/Conway, E. J.</p>
<p><b>NAGW 407</b> <b>Hampton Institute</b> <b>4811</b> Radiative transfer model for remote sensing of laser induced fluorescence of phytoplankton in non-homogeneous turbid waters <i>Period</i> <i>Obligations</i> 10/01/82-09/30/83 FY83: \$47,602 TOTAL: \$47,602 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Venable, D. D. HQ-EE/Esaias, W. E. 33-Oceanography HQ-EE/Wilson, W. S.</p>	<p><b>NAG 1-357</b> <b>Longwood College</b> <b>4818</b> Bithienyl polymers <i>Period</i> <i>Obligations</i> 05/16/83-05/15/84 FY83: \$21,811 TOTAL: \$21,811 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Barber, P. G. ARC/Bell, V. L. 12-Chemistry Maxwell, M. H.</p>
<p><b>NAS 1-16455</b> <b>Hampton Institute</b> <b>4812</b> Summer research fellowship program <i>Period</i> <i>Obligations</i> 11/07/80-01/21/82 FY83: TOTAL: \$63,949 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Darden, G. C. LARC/Erickson, W. D. 99-Multi-Discip LARC/Foughner, J. T.</p>	<p><b>NAS 1-16921</b> <b>Norfolk State University</b> <b>4819</b> Development of computer aided algebraic systems at Langley Research Center <i>Period</i> <i>Obligations</i> 01/18/82-07/17/84 FY83: \$24,766 TOTAL: \$47,131 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> DeLoatch, S. J. LARC/Shoosmith, J. N. 29-Math/Cmputer,NEC</p>
<p><b>NCC 1-7</b> <b>Hampton Institute</b> <b>4813</b> Complex vector operations on star computer with applications to linear algebra problems linear systems of linear equations <i>Period</i> <i>Obligations</i> 04/15/79-12/15/82 FY83: TOTAL: \$83,956 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Shan, S. N. LARC/Haigler, G. W. 21-Mathematics LARC/Lambiotte, J. J.</p>	<p><b>NAG 1-1</b> <b>Old Dominion University</b> <b>4820</b> Atmospheric sensors: In situ and remote sensing technique comparisons <i>Period</i> <i>Obligations</i> 10/25/79-10/15/83 FY83: TOTAL: \$171,117 <i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Copeland, G. E. LARC/Lebel, P. J. 13-Physics Harward, C. N. LARC/Bair, C. H.</p>

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NAG 1-21** **Old Dominion University** **4821**  
Radiative transfer models for the Earth radiation budget studies  
*Period* *Obligations*  
01/01/80-07/31/83 FY83: TOTAL: \$102,133  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tiwari, S. N. LARC/Suttles, J. T. 31-Atmos Sci  
Subramaniam, S. V. LARC/Raper, J. L.

**NAG 1-63** **Old Dominion University** **4822**  
Development of computer models for the prediction of large distorted reflector antenna characteristics  
*Period* *Obligations*  
05/16/80-07/15/82 FY83: TOTAL: \$59,809  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Moskowitz, S. M. LARC/Bailey, M. C. 45-Elec Engr

**NAG 1-96** **Old Dominion University** **4823**  
Boundary layer receptivity  
*Period* *Obligations*  
08/01/80-09/30/81 FY83: TOTAL: \$49,585  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Grosch, C. E. LARC/Bushnell, D. M. 41-Aero Engr  
LARC/Hefner, J. N.

**NAG 1-102** **Old Dominion University** **4824**  
Research in control of large space structures  
*Period* *Obligations*  
02/15/81-02/14/84 FY83: \$68,711 TOTAL: \$187,028  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goglia, G. L. LARC/Hamer, H. A. 49-Engr, NEC  
Joshi, S. M.

**NAG 1-120** **Old Dominion University** **4825**  
Analysis of aerothermo-dynamic environment of an aerocapture vehicle  
*Period* *Obligations*  
11/04/80-02/03/82 FY83: TOTAL: \$23,534  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tiwari, S. N. LARC/Moss, J. N. 41-Aero Engr

**NAG 1-121** **Old Dominion University** **4826**  
An investigation of the feasibility of active boundary layer thickening for aircraft drag reduction  
*Period* *Obligations*  
11/04/80-11/03/83 FY83: \$31,050 TOTAL: \$96,961  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ash, R. L. LARC/Bushnell, D. M. 41-Aero Engr  
LARC/Hefner, J. N.

**NAG 1-142** **Old Dominion University** **4827**  
Propagation of sound through the Earth's atmosphere  
*Period* *Obligations*  
01/01/81-07/31/82 FY83: TOTAL: \$41,022  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Becher, J. E. LARC/Holmes, H. K. 13-Physics  
Merideth, R.

**NAG 1-148** **Old Dominion University** **4828**  
Modeling of thin-film gallium arsenide (GaAs) growth  
*Period* *Obligations*  
02/01/81-08/15/84 FY83: \$25,000 TOTAL: \$99,614  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Heinbockel, J. H. LARC/Walker, G. H. 47-Materials Engr  
LARC/Conway, E. J.

**NAG 1-175** **Old Dominion University** **4829**  
Higher modes of Orr-Sommerfeld problem for the stability of boundary-layer flows  
*Period* *Obligations*  
09/01/81-08/31/82 FY83: TOTAL: \$32,923  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lakin, W. D. LARC/Dagenhart, J. R. 21-Mathematics  
Grosch, C. E. LARC/Newman, P. A.

**NAG 1-189** **Old Dominion University** **4830**  
Relationship among sea surface roughness variations, oceanographic analyses and airborne remote sensing analyses  
*Period* *Obligations*  
05/16/81-10/31/81 FY83: TOTAL: \$17,430  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Oertel, G. F. LARC/Croswell, W. F. 33-Oceanography  
LARC/Johnson, J. W.

**NAG 1-196** **Old Dominion University** **4831**  
Low-velocity impact behavior of composites  
*Period* *Obligations*  
09/15/81-08/31/84 FY83: TOTAL: \$107,692  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goglia, G. L. LARC/Illeg, W. 47-Materials Engr  
Lal, K. M. LARC/Davidson, J. R.

**NAG 1-197** **Old Dominion University** **4832**  
Burgers approximation for two-dimensional flow past an ellipse  
*Period* *Obligations*  
05/26/81-08/31/82 FY83: TOTAL: \$23,328  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dorrepal, J. M. LARC/Wornom, S. F. 21-Mathematics  
LARC/South, J. C., Jr.

**NAG 1-219** **Old Dominion University** **4833**  
Toughened composite material micromechanics analysis and impact resistance evaluation  
*Period* *Obligations*  
01/01/82-12/31/83 FY83: \$48,244 TOTAL: \$87,677  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goglia, G. L. LARC/Illeg, W. 19-Phys Sci, NEC  
Shivakumar, K. N. LARC/Poe, C. C., Jr.

**NAG 1-223** **Old Dominion University** **4834**  
Fitting multidimensional splines using statistical variable selection techniques  
*Period* *Obligations*  
10/19/81-10/18/82 FY83: TOTAL: \$31,965  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Smith, P. L. LARC/Schiess, J. R. 21-Mathematics  
LARC/Shoosmith, J. N.

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NAG 1-228** **Old Dominion University** **4835**  
 Laminar flow transition and laminar flow control in plane channel flow  
*Period* *Obligations*  
 10/19/81-10/31/83 FY83: \$68,548 TOTAL: \$126,182  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Goglia, G. L. LARC/Harvey, W. D. 41-Aero Engr  
 Biringen, S.

**NAG 1-318** **Old Dominion University** **4842**  
 Control methodologies for large space structures  
*Period* *Obligations*  
 12/09/82-09/08/83 FY83: \$24,051 TOTAL: \$24,051  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 McRee, G. J. LARC/Montgomery, R. C. 42-Astro Engr  
 LARC/Williams, J. P.

**NAG 1-234** **Old Dominion University** **4836**  
 Propagation of sound through the Earth's atmosphere  
*Period* *Obligations*  
 01/01/82-08/31/83 FY83: TOTAL: \$44,995  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Becker, J. LARC/Holmes, H. K. 13-Physics  
 Meredith, R.

**NAG 1-334** **Old Dominion University** **4843**  
 Sidewall boundary layer effects on two-dimensional airfoil testing  
*Period* *Obligations*  
 03/01/83-11/30/83 FY83: \$39,834 TOTAL: \$39,834  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Goglia, G. L. LARC/Johnson, C. B. 41-Aero Engr  
 Annageri, M. V. LARC/Kilgore, R. A.

**NAG 1-257** **Old Dominion University** **4837**  
 Fundamental studies of heat load and thermal structural analyses of large space structures  
*Period* *Obligations*  
 05/16/82-12/31/83 FY83: \$14,275 TOTAL: \$45,281  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Thornton, E. A. LARC/Garrett, L. B. 46-Mech Engr  
 Dechaumphai, P. LARC/Wright, R. L.

**NAG 1-336** **Old Dominion University** **4844**  
 Passive damping concepts for slender columns in space structures  
*Period* *Obligations*  
 02/01/83-01/31/84 FY83: \$18,900 TOTAL: \$18,900  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Razzaq, Z. LARC/Bush, H. G. 49-Engr, NEC  
 LARC/Mikulas, M. M.

**NAG 1-266** **Old Dominion University** **4838**  
 Calibration of continuous measurement of carbon monoxide sensors  
*Period* *Obligations*  
 04/01/82-09/30/82 FY83: TOTAL: \$16,774  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Kindle, E. C. LARC/Harriss, R. C. 31-Atmos Sci  
 LARC/Mugler, J.

**NAG 1-340** **Old Dominion University** **4845**  
 Computation of design parameters and visualization of Goertler vortices  
*Period* *Obligations*  
 02/16/83-10/31/83 FY83: \$21,013 TOTAL: \$21,013  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Verma, A. K. LARC/Dagenhart, J. R. 41-Aero Engr

**NAG 1-294** **Old Dominion University** **4839**  
 Application of stability theory to laminar flow control  
*Period* *Obligations*  
 07/21/82-08/20/82 FY83: TOTAL: \$5,825  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Goglia, G. L. LARC/Harvey, W. D. 41-Aero Engr  
 El-hady, N. M.

**NAG 1-346** **Old Dominion University** **4846**  
 Benchmark solutions of the full Navier-Stokes equations for nonequilibrium air flow  
*Period* *Obligations*  
 03/05/83-03/04/84 FY83: \$65,358 TOTAL: \$65,358  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Goglia, G. L. LARC/Zoby, E. V. 41-Aero Engr  
 Gupta, R. N.

**NAG 1-297** **Old Dominion University** **4840**  
 Stability of boundary layer profiles on flat plates and the corner boundary layer problem  
*Period* *Obligations*  
 09/01/82-09/30/83 FY83: TOTAL: \$35,451  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Lakin, W. D. LARC/Dagenhart, J. R. 21-Mathematics

**NAG 1-352** **Old Dominion University** **4847**  
 Receptivity of the boundary layer on a blunt body  
*Period* *Obligations*  
 03/16/83-03/15/84 FY83: \$35,000 TOTAL: \$35,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Grosch, C. E. LARC/Dagenhart, J. R. 29-Math/Computer, NEC

**NAG 1-301** **Old Dominion University** **4841**  
 Component mode synthesis and large deflection vibrations of complex structures  
*Period* *Obligations*  
 11/01/82-10/31/83 FY83: \$57,990 TOTAL: \$57,990  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Mei, C. LARC/Walz, J. F. 46-Mech Engr  
 LARC/Housner, J. M.

**NAG 1-353** **Old Dominion University** **4848**  
 Experimental studies on Taylor-Goertler vortices  
*Period* *Obligations*  
 05/01/83-04/30/84 FY83: \$60,195 TOTAL: \$60,195  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Goglia, G. L. LARC/Dagenhart, J. R. 41-Aero Engr  
 Mangalam, S. M.

**NASA'S UNIVERSITY PROGRAM**  
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<b>NAG 1-363</b>	<b>Old Dominion University</b>		<b>4849</b>
	Institute for computational and applied mechanics (ICAM)		
	Period	Obligations	
05/16/83-05/15/84	FY83: \$103,900	TOTAL: \$103,900	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Tiwari, S. N.	LARC/Massenberg, S. E.	41-Aero Engr	
	LARC/Tolson, R. N.		
<b>NAG 1-387</b>	<b>Old Dominion University</b>		<b>4850</b>
	New devices for flow measurement in wind tunnels		
	Period	Obligations	
10/01/83-05/31/84	FY83: \$24,617	TOTAL: \$24,617	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Wagh, M. D.	LARC/Holmes, H. K.	45-Elec Engr	
	LARC/Zuckerwar, A. J.		
<b>NAS 1-15648</b>	<b>Old Dominion University</b>		<b>4851</b>
	Research in aerodynamics and related fields		
	Period	Obligations	
12/13/78-12/12/81	FY83:	TOTAL: \$541,376	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Unavailable	LARC/Erickson, W. D.	41-Aero Engr	
	LARC/Duberg, J. E.		
<b>NAS 1-16537</b>	<b>Old Dominion University</b>		<b>4852</b>
	Editorial analysis and review services		
	Period	Obligations	
02/16/81-11/15/85	FY83:	TOTAL: \$27,813	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Stohrer, F. F.	LARC/Huffman, J. P.	99-Multi-Discip	
<b>NAS 1-16931</b>	<b>Old Dominion University</b>		<b>4853</b>
	Computation of internal flow field in a scramjet engine		
	Period	Obligations	
01/12/82-09/15/83	FY83:	TOTAL: \$44,967	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Tiwari, S. N.	LARC/Kumar, A.	42-Astro Engr	
Venkatapathy, E.	LARC/Drummond, J. P.		
<b>NAS 1-17099</b>	<b>Old Dominion University</b>		<b>4854</b>
	Research in aerodynamics and related fields		
	Period	Obligations	
08/05/82-08/04/85	FY83: \$247,770	TOTAL: \$279,285	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Unavailable	LARC/Prior, E. J.	41-Aero Engr	
<b>NAS 9-16431</b>	<b>Old Dominion University</b>		<b>4855</b>
	Study for proportion estimation sensitivity analysis		
	Period	Obligations	
07/16/81-07/15/82	FY83:	TOTAL: \$35,000	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Chhikara, R. S.	JSC/Browne, T. D.	39-Env Sci, NEC	
<b>NCC 1-2</b>	<b>Old Dominion University</b>		<b>4856</b>
	Measurements of the global distribution of carbon monoxide in the troposphere		
	Period	Obligations	
04/01/79-12/31/82	FY83: \$412	TOTAL: \$212,302	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Kindle, E. C.	LARC/Orr, H. D.	31-Atmos Sci	
Hinton, R. R.	LARC/Wallio, H. A.		
<b>NCC 1-28</b>	<b>Old Dominion University</b>		<b>4857</b>
	Application of advanced lidar techniques for atmospheric remote sensing		
	Period	Obligations	
12/15/79-12/31/83	FY83: \$68,348	TOTAL: \$284,599	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Kindle, E. C.	LARC/Browell, E. V.	31-Atmos Sci	
	LARC/Carter, A. F.		
<b>NCC 1-30</b>	<b>Old Dominion University</b>		<b>4858</b>
	Coupled radiative-chemical studies of the Earth's troposphere		
	Period	Obligations	
12/01/79-02/28/82	FY83:	TOTAL: \$46,606	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Tiwari, S. N.	LARC/Levine, J. S.	31-Atmos Sci	
<b>NCC 1-32</b>	<b>Old Dominion University</b>		<b>4859</b>
	Multicolor lidar system research		
	Period	Obligations	
12/15/79-12/14/83	FY83: \$87,695	TOTAL: \$309,474	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Copeland, G. E.	LARC/Browell, E. V.	13-Physics	
Allen, R. J.	LARC/Carter, A. F.		
<b>NCC 1-34</b>	<b>Old Dominion University</b>		<b>4860</b>
	Development of data processing		
	Period	Obligations	
01/22/80-10/15/83	FY83: \$117,848	TOTAL: \$499,623	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Kindle, E. C.	LARC/Hypes, W. D.	39-Env Sci, NEC	
Casas, J. C.			
<b>NCC 1-42</b>	<b>Old Dominion University</b>		<b>4861</b>
	A study of physical processes for space-radiation protection		
	Period	Obligations	
06/04/80-05/15/84	FY83: \$77,199	TOTAL: \$184,877	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Khandelwal, G. S.	LARC/Townsend, L. W.		
	LARC/Conway, E. J.	19-Phys Sci, NEC	
<b>NCC 1-57</b>	<b>Old Dominion University</b>		<b>4862</b>
	Effectiveness and acceptability of real-time oculometer system in commercial flight training program		
	Period	Obligations	
11/04/81-09/03/82	FY83:	TOTAL: \$48,473	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Kirby, R. H.	LARC/Spady, A. A., Jr.	41-Aero Engr	
Coates, G. D.			
<b>NCC 1-60</b>	<b>Old Dominion University</b>		<b>4863</b>
	Aerothermal structural concepts study		
	Period	Obligations	
12/08/81-12/07/83	FY83: \$25,990	TOTAL: \$47,044	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Prabhakaran, R.	LARC/Davis, R. C.	41-Aero Engr	
	LARC/Cooper, P. A.		

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**NCC 1-65** **Old Dominion University** **4864**  
Wing-propellor interference studies  
*Period* *Obligations*  
02/02/82-09/30/83 FY83: \$32,286 TOTAL: \$47,582  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tiware, S. N. LARC/Liu, C. H. 41-Aero Engr  
Prabhu, R. K. LARC/Greene, G. C.

**NCC 1-68** **Old Dominion University** **4865**  
Numerical solution of axisymmetric flow with arbitrary wall geometry  
*Period* *Obligations*  
06/01/82-12/31/83 FY83: \$26,439 TOTAL: \$31,786  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tiware, S. N. LARC/Smith, R. E., Jr. 41-Aero Engr  
LARC/Shoosmith, J. N.

**NCC 1-73** **Old Dominion University** **4866**  
An investigation of residual stresses in advanced composites  
*Period* *Obligations*  
11/04/82-11/03/83 FY83: \$15,535 TOTAL: \$15,535  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Prabhakaran, R. LARC/Tompkins, S. S. 46-Mech Engr  
LARC/Bowles, D. E.

**NCC 1-74** **Old Dominion University** **4867**  
User interface for integrated computer-aided design systems  
*Period* *Obligations*  
01/01/83-12/31/83 FY83: \$33,327 TOTAL: \$33,327  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schwing, J. L. LARC/Wilhite, A. W. 22-Computer Science  
LARC/Rehder, J. J.

**NGR 47-003-052** **Old Dominion University** **4868**  
Graduate research program in aeronautics and air transportation  
*Period* *Obligations*  
05/12/71-08/31/85 FY83: \$55,000 TOTAL: \$838,922  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Roberts, A. S., Jr. LARC/Tolson, R. H. 41-Aero Engr  
LARC/Massenberg, S. E.

**NGT 47-003-029** **Old Dominion University** **4869**  
Summer faculty fellowship program in research  
*Period* *Obligations*  
11/14/69-03/31/84 FY83: \$295,409 TOTAL: \$1,645,428  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goglia, G. L. HQ-LB/Owens, F. C. 49-Engr, NEC

**NGT 47-003-800** **Old Dominion University** **4870**  
Graduate student researchers program  
*Period* *Obligations*  
07/01/81-06/30/83 FY83: TOTAL: \$22,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Coates, G. D. HQ-LB/Carter, C. H. 69-Psych, NEC

**NGT 47-003-801** **Old Dominion University** **4871**  
Graduate student researchers program  
*Period* *Obligations*  
09/01/82-09/30/83 FY83: TOTAL: \$11,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Coates, G. D. HQ-LB/Carter, C. H. 62-Social Aspects

**NGT 47-003-802** **Old Dominion University** **4872**  
NASA graduate student researchers program  
*Period* *Obligations*  
08/16/83-08/15/84 FY83: \$12,196 TOTAL: \$12,196  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Smith, P. W. HQ-LB/Owens, F. C. 21-Mathematics

**NSG 1167** **Old Dominion University** **4873**  
The structural behavior of advanced composite materials  
*Period* *Obligations*  
06/01/75-09/30/82 FY83: TOTAL: \$135,490  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Thornton, E. A. LARC/Dixon, S. C. 41-Aero Engr  
Fallon, D. J.

**NSG 1177** **Old Dominion University** **4874**  
Experimental and analytical studies in fluidics  
*Period* *Obligations*  
05/01/75-08/31/84 FY83: TOTAL: \$122,953  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goglia, G. L. LARC/Hellbaum, R. F. 45-Elec Engr  
LARC/Garner, H. D.

**NSG 1271** **Old Dominion University** **4875**  
Space Shuttle experiments studies  
*Period* *Obligations*  
03/01/76-02/29/84 FY83: \$232,106 TOTAL: \$1,339,460  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Brock, F. J. LARC/Melfi, L. T., Jr. 13-Physics  
Hueser, J. E. LARC/Jones, J. J.

**NSG 1321** **Old Dominion University** **4876**  
Concepts for structurally compatible thermal finite elements  
*Period* *Obligations*  
09/01/76-12/31/83 FY83: \$100,835 TOTAL: \$354,486  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Thornton, E. A. LARC/Wieting, A. R. 49-Engr, NEC

**NSG 1357** **Old Dominion University** **4877**  
Implementation of advanced Trefftz plane drag optimization technique in vortex lattice wing design program  
*Period* *Obligations*  
11/08/76-02/28/83 FY83: TOTAL: \$118,982  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kuhlman, J. M. LARC/Frink, N. T. 41-Aero Engr

**NSG 1393** **Old Dominion University** **4878**  
Computational solution of atmospheric chemistry problems  
*Period* *Obligations*  
06/01/77-09/30/84 FY83: \$59,717 TOTAL: \$262,673  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ake, R. L. LARC/Phillips, D. H. 12-Chemistry  
Jafri, J. A. LARC/Rogowski, R. S.

**NASA'S UNIVERSITY PROGRAM  
VIRGINIA (Continued)**

NSG 1480	Old Dominion University		4879
	Comparative study of flare control laws		
	Period	Obligations	
	12/15/77-12/31/81	FY83: TOTAL: \$108,559	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Tcheng, P.	LARC/Creedon, J. F.	41-Aero Engr	
Nadkarni, A. A.	LARC/Ostroff, A. J.		
NSG 1517	Old Dominion University		4880
	A numerical investigation of viscous slot flow		
	Period	Obligations	
	04/15/78-11/30/81	FY83: TOTAL: \$85,678	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Cooke, C. H.	LARC/Dwoyer, D. L.	41-Aero Engr	
	LARC/South, J. C.		
NSG 1560	Old Dominion University		4881
	Development of a nonlinear vortex method		
	Period	Obligations	
	09/01/78-09/30/83	FY83: \$28,147 TOTAL: \$152,818	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Kandil, O. A.	LARC/Yates, E. C., Jr.	41-Aero Engr	
NSG 1581	Old Dominion University		4882
	Investigation of aerodynamic characteristics of wings having vortex flow using different numerical codes		
	Period	Obligations	
	09/01/78-11/30/83	FY83: TOTAL: \$131,800	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Chaturvedi, S. K.	LARC/Luckring, J. M.	41-Aero Engr	
	LARC/Campbell, J. F.		
NSG 1568	Old Dominion University		4883
	Theoretical study of solar pumped lasers		
	Period	Obligations	
	12/15/78-10/31/83	FY83: \$31,858 TOTAL: \$148,419	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Harries, W. L.	LARC/Wilson, J. W.	13-Physics	
	LARC/Meador, W. E.		
NSG 1649	Old Dominion University		4884
	Dynamic identification for control of large space structures		
	Period	Obligations	
	10/01/79-04/30/83	FY83: TOTAL: \$98,566	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Ibrahim, S. R.	LARC/Prior, E. J.	46-Mech Engr	
	LARC/Hanks, B. R.		
NSG 1650	Old Dominion University		4885
	Design of multi-variable feedback control systems via spectral assignment		
	Period	Obligations	
	09/01/79-04/15/84	FY83: \$38,617 TOTAL: \$173,705	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Mielke, R. R.	LARC/Jones, R. L.	41-Aero Engr	
Tung, L. J.	LARC/Oehman, W. I.		
NSG 1655	Old Dominion University		4886
	Airborne antenna pattern calculations		
	Period	Obligations	
	11/01/79-10/31/83	FY83: \$17,587 TOTAL: \$80,201	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Mielke, R. R.	LARC/Gilreath, M. C.	45-Elec Engr	
NSG 5289	Old Dominion University		4887
	Radiation effects studies for the high resolution spectrograph		
	Period	Obligations	
	07/10/78-11/30/83	FY83: TOTAL: \$176,796	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Becher, J.	GSFC/Fowler, W. B.	13-Physics	
Kernell, R. L.			
NAG 1-43	University of Virginia		4888
	The development of the minicomputer/global bus interface for the finite element machine		
	Period	Obligations	
	03/01/80-05/31/83	FY83: TOTAL: \$55,576	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Aylor, J. H.	LARC/Peebles, S. W.	45-Elec Engr	
	LARC/Storaasli, O. O.		
NAG 1-46	University of Virginia		4889
	Numerical algorithms for finite element computations on arrays of microprocessors		
	Period	Obligations	
	03/01/80-09/30/83	FY83: TOTAL: \$108,535	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Ortega, J. M.	LARC/Storaasli, O. O.	49-Engr, NEC	
	LARC/Peebles, S. W.		
NAG 1-137	University of Virginia		4890
	Large space structure damping design		
	Period	Obligations	
	01/16/81-01/15/83	FY83: TOTAL: \$123,957	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Pilkey, W. D.	LARC/Horner, G. C.	42-Astro Engr	
Wang, B. P.			
NAG 1-177	University of Virginia		4891
	Investigations of semiconductor clad optical waveguides		
	Period	Obligations	
	05/01/81-12/31/83	FY83: TOTAL: \$102,869	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Batchman, T. E.	LARC/Stermer, R. L.	45-Elec Engr	
	LARC/Segura, R.		
NAG 1-233	University of Virginia		4892
	Design of comprehensive approach to engineering of crucial software		
	Period	Obligations	
	11/01/81-01/31/83	FY83: TOTAL: \$49,979	
	Prin. Invest.	NASA Tech. Officer	CASE Category
Pratt, T. W.	LARC/Lupton, A. O.	22-Computer Science	



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<b>NAG 1-242</b> <b>University of Virginia</b> <b>4893</b> Research in computer science <i>Period</i> 12/01/81-11/30/83 <i>Prin. Invest.</i> Ortega, J. M. <i>Obligations</i> FY83: \$100,000 NASA Tech. Officer LARC/Shoosmith, J. N. 22-Computer Science LARC/Fulton, R. E. TOTAL: \$180,000 CASE Category	<b>NAG 3-141</b> <b>University of Virginia</b> <b>4900</b> Modulation and coding in the small bt regime <i>Period</i> 03/01/81-05/31/83 <i>Prin. Invest.</i> Wilson, S. G. <i>Obligations</i> FY83: NASA Tech. Officer LERC/Miller, E. F. LERC/Whyte, W. A. TOTAL: \$99,217 CASE Category 45-Elec Engr
<b>NAG 1-260</b> <b>University of Virginia</b> <b>4894</b> Implementation and use of ADA on distributed systems with high reliability requirements <i>Period</i> 03/05/82-12/31/83 <i>Prin. Invest.</i> Knight, J. C. <i>Obligations</i> FY83: \$76,462 NASA Tech. Officer LARC/Senn, E. H. 22-Computer Science LARC/Voigt, S. J. TOTAL: \$107,462 CASE Category	<b>NAG 3-180</b> <b>University of Virginia</b> <b>4901</b> Aerodynamic cross-coupling forces on centrifugal turbomachinery <i>Period</i> 04/25/81-10/31/83 <i>Prin. Invest.</i> Allaire, P. E. Sexton, M. R. Barrett, L. E. <i>Obligations</i> FY83: \$34,152 NASA Tech. Officer LERC/Kascak, A. F. LERC/Fleming, D. P. TOTAL: \$156,291 CASE Category 46-Mech Engr
<b>NAG 1-262</b> <b>University of Virginia</b> <b>4895</b> Investigation of the quantum efficiency of optical heterodyne detectors <i>Period</i> 03/15/82-12/31/83 <i>Prin. Invest.</i> Batchman, T. E. <i>Obligations</i> FY83: \$18,949 NASA Tech. Officer LARC/Jobson, D. J. LARC/Katzberg, S. J. TOTAL: \$54,641 CASE Category 45-Elec Engr	<b>NAG 3-263</b> <b>University of Virginia</b> <b>4902</b> Design study of magnetic eddy-current vibration suppression dampers for application to cryogenic turbomachinery <i>Period</i> 03/05/82-05/04/83 <i>Prin. Invest.</i> Humphris, R. R. Gunter, E. J. <i>Obligations</i> FY83: NASA Tech. Officer LERC/Cunningham, R. E. LERC/Kiraly, L. J. TOTAL: \$59,096 CASE Category 46-Mech Engr
<b>NAG 1-349</b> <b>University of Virginia</b> <b>4896</b> Digital control system for space structure dampers <i>Period</i> 03/03/83-03/02/84 <i>Prin. Invest.</i> Haviland, J. K. <i>Obligations</i> FY83: \$29,975 NASA Tech. Officer LARC/Horner, G. C. TOTAL: \$29,975 CASE Category 46-Mech Engr	<b>NAG 3-316</b> <b>University of Virginia</b> <b>4903</b> Gigabit per second digital communications: Theory in practice <i>Period</i> 08/15/82-12/14/83 <i>Prin. Invest.</i> Wilson, S. G. Oliver, J. D. <i>Obligations</i> FY83: \$20,000 NASA Tech. Officer LERC/Connolly, D. J. TOTAL: \$78,799 CASE Category 45-Elec Engr
<b>NAG 1-350</b> <b>University of Virginia</b> <b>4897</b> Stress effects in multilayers <i>Period</i> 06/01/83-05/31/84 <i>Prin. Invest.</i> Jesser, W. A. <i>Obligations</i> FY83: \$36,428 NASA Tech. Officer ARC/Fripp, A. L. ARC/Crouch, R. K. TOTAL: \$36,428 CASE Category 47-Materials Engr	<b>NAG 3-402</b> <b>University of Virginia</b> <b>4904</b> An investigation of interfacial phase formation in fiber reinforced ceramic matrix composite materials <i>Period</i> 03/15/83-03/14/84 <i>Prin. Invest.</i> Wawner, F. E. <i>Obligations</i> FY83: \$47,296 NASA Tech. Officer LERC/Behrendt, D. R. LERC/Grimes, H. H. TOTAL: \$47,296 CASE Category 47-Materials Engr
<b>NAG 1-371</b> <b>University of Virginia</b> <b>4898</b> Parametric studies of the epitaxial growth of metals and semiconductors on ionic substrates <i>Period</i> 06/01/83-01/15/84 <i>Prin. Invest.</i> Jesser, W. A. <i>Obligations</i> FY83: \$15,000 NASA Tech. Officer LARC/Outlaw, R. A. LARC/Conway, E. J. TOTAL: \$15,000 CASE Category 47-Materials Engr	<b>NAG 5-61</b> <b>University of Virginia</b> <b>4905</b> Star formation in blue compact dwarf galaxies <i>Period</i> 06/01/80-05/31/83 <i>Prin. Invest.</i> Thuan, T. X. <i>Obligations</i> FY83: NASA Tech. Officer GSFC/Kondo, Y. TOTAL: \$4,170 CASE Category 11-Astronomy
<b>NAG 1-373</b> <b>University of Virginia</b> <b>4899</b> Flowfield measurements in a model scramjet combustor using laser-induced iodine fluorescence <i>Period</i> 07/01/83-06/30/84 <i>Prin. Invest.</i> McDaniel, J. C. <i>Obligations</i> FY83: \$48,000 NASA Tech. Officer LARC/Northam, G. B. TOTAL: \$48,000 CASE Category 41-Aero Engr	<b>NAG 5-102</b> <b>University of Virginia</b> <b>4906</b> Kinematic analysis of tropical cyclones using satellite wind measurements <i>Period</i> 09/01/80-11/15/83 <i>Prin. Invest.</i> Frank, W. M. Rodgers, E. B. <i>Obligations</i> FY83: NASA Tech. Officer GSFC/Rodgers, E. B. TOTAL: \$49,863 CASE Category 31-Atmos Sci

# **NASA'S UNIVERSITY PROGRAM** **VIRGINIA (Continued)**

<b>NAG 5-256</b>	<b>University of Virginia</b>		<b>4907</b>
	Nonthermal ultraviolet radiation in nearly compact radio sources		
	<i>Period</i>	<i>Obligations</i>	
	08/01/82-07/31/84	FY83: TOTAL: \$3,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	O'Connell, R. W.	GSFC/Kondo, Y.	11-Astronomy
	Puschell, J. L.		
	Thuan, T. X.		
<b>NAG 5-257</b>	<b>University of Virginia</b>		<b>4908</b>
	Ultraviolet studies of strong nuclear radio sources in normal spiral galaxies		
	<i>Period</i>	<i>Obligations</i>	
	09/01/82-08/31/84	FY83: TOTAL: \$5,600	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Thuan, T. X.	GSFC/Kondo, Y.	11-Astronomy
<b>NAG 5-297</b>	<b>University of Virginia</b>		<b>4909</b>
	Investigation of satellite measurements in the presence of clouds		
	<i>Period</i>	<i>Obligations</i>	
	02/15/83-02/14/84	FY83: \$92,771 TOTAL: \$92,771	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Warner, C.	GSFC/Halem, M.	31-Atmos Sci
<b>NAG 8-375</b>	<b>University of Virginia</b>		<b>4910</b>
	Observe time in quest investigative program or X-ray observations of 2 remarkable group of quasars and X-ray observations of selected area 57 and X-ray observations of blue compact galaxies		
	<i>Period</i>	<i>Obligations</i>	
	09/21/80-12/31/83	FY83: TOTAL: \$9,447	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Thuan, T. X.	MSFC/Stone, J. F.	11-Astronomy
<b>NAGW 186</b>	<b>University of Virginia</b>		<b>4911</b>
	Sputtering effects on the Jovian satellites and rings		
	<i>Period</i>	<i>Obligations</i>	
	04/15/81-05/14/84	FY83: \$33,887 TOTAL: \$103,393	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Johnson, R. E.	HQ-EL/Quaide, W. L.	32-Geological Sci
		HQ-EL/Boyce, J. M.	
<b>NAGW 352</b>	<b>University of Virginia</b>		<b>4912</b>
	Crystal biophysics		
	<i>Period</i>	<i>Obligations</i>	
	04/01/82-09/14/82	FY83: TOTAL: \$994	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Kretsinger, R. H.	HQ-EB/Devincenzi, D. L.	51-Biological Sci
<b>NAGW 461</b>	<b>University of Virginia</b>		<b>4913</b>
	Ion collisions of importance in the Io plasma tours		
	<i>Period</i>	<i>Obligations</i>	
	09/01/83-08/30/84	FY83: \$19,346 TOTAL: \$19,346	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Johnson, R. E.	HQ-EL/Brinton, H. C.	31-Atmos Sci
<b>NAS 1-16286</b>	<b>University of Virginia</b>		<b>4914</b>
	Air transportation systems research		
	<i>Period</i>	<i>Obligations</i>	
	11/13/80-05/18/84	FY83: TOTAL: \$44,960	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Kugitman, A. R.	LARC/Taylor, R. T.	41-Aero Engr
	Jacobson, I.	LARC/Driver, C.	
<b>NAS 1-16550</b>	<b>University of Virginia</b>		<b>4915</b>
	Interplanetary dust experiment		
	<i>Period</i>	<i>Obligations</i>	
	01/07/81-01/06/86	FY83: TOTAL: \$138,057	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Singer, S. F.	LARC/Jones, J. L.	31-Atmos Sci
	Stanley, J. E.		
<b>NAS 5-24218</b>	<b>University of Virginia</b>		<b>4916</b>
	Research study on mixer diodes for submillimeter applications		
	<i>Period</i>	<i>Obligations</i>	
	06/23/77-09/30/84	FY83: \$35,000 TOTAL: \$207,268	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Mattauch, R. J.	GSFC/Lamb, G. M.	49-Engr, NEC
<b>NAS 5-26110</b>	<b>University of Virginia</b>		<b>4917</b>
	Spacelab/ultraviolet imaging telescope astronomical investigations		
	<i>Period</i>	<i>Obligations</i>	
	06/01/82-05/31/84	FY83: TOTAL: \$32,107	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	O'Connell, R. W.	GSFC/Stecker, T. P.	11-Astronomy
<b>NAS 5-26466</b>	<b>University of Virginia</b>		<b>4918</b>
	Development of superconducting tunnel junctions for millimeter-wave receivers		
	<i>Period</i>	<i>Obligations</i>	
	03/20/81-06/30/84	FY83: \$55,000 TOTAL: \$147,314	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Mattauch, R. J.	GSFC/Jones, R. L.	45-Elec Engr
<b>NAS 5-26476</b>	<b>University of Virginia</b>		<b>4919</b>
	Starlab facility definition team (FDT) continuing study of schematic design and scientific applications		
	<i>Period</i>	<i>Obligations</i>	
	01/19/81-03/31/84	FY83: TOTAL: \$102,839	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	O'Connell, R. W.	GSFC/Cyphers, H. D.	11-Astronomy
<b>NAS 8-33327</b>	<b>University of Virginia</b>		<b>4920</b>
	X-ray observations of selected areas		
	<i>Period</i>	<i>Obligations</i>	
	03/26/79-12/31/83	FY83: TOTAL: \$4,915	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Thuan, T. X.	MSFC/Jones, J. B., Jr.	11-Astronomy
	Owen, F. M.		
<b>NGT 47-005-800</b>	<b>University of Virginia</b>		<b>4921</b>
	Graduate student researchers program		
	<i>Period</i>	<i>Obligations</i>	
	06/01/82-05/31/84	FY83: \$15,000 TOTAL: \$28,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Pilkey, W. D.	HQ-LB/Owens, F. C.	41-Aero Engr

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NGT 47-005-801** **University of Virginia** **4922**  
Graduate student researchers program  
*Period* *Obligations*  
06/01/82-05/31/84 FY83: \$15,000 TOTAL: \$26,400  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lilleleht, L. U. HQ-LB/Owens, F. C. 43-Chem Engr

**NSG 1652** **University of Virginia** **4923**  
The terrestrial growth of lead-tin-telluride by techniques related to low-gravity growth  
*Period* *Obligations*  
09/01/79-09/30/82 FY83: TOTAL: \$78,032  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jesser, W. A. LARC/Fripp, A. L. 47-Materials Engr  
LARC/Crouch, R. K.

**NSG 2225** **University of Virginia** **4924**  
Mammalian body size, composition and growth as influenced by hypokinesia  
*Period* *Obligations*  
04/01/77-07/31/83 FY83: TOTAL: \$101,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pitts, G. C. ARC/Holton, E. M. 51-Biological Sci

**NSG 7572** **University of Virginia** **4925**  
Study of layered deposits and paleoclimates on Mars  
*Period* *Obligations*  
04/01/79-01/31/84 FY83: \$20,000 TOTAL: \$114,808  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Howard, A. D. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAG 1-239** **Virginia Commonwealth University** **4926**  
Synthesis of thermally stable polypyrazoles and polyprimidines  
*Period* *Obligations*  
12/01/81-11/30/83 FY83: \$39,021 TOTAL: \$70,896  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bass, R. G. LARC/Hergenrother, P. M. 12-Chemistry  
LARC/St.clair, T. L.

**NAG 1-241** **Virginia Commonwealth University** **4927**  
Development of acoustic test apparatus for evaluation of the state of the human airways  
*Period* *Obligations*  
12/01/81-11/30/83 FY83: TOTAL: \$48,200  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Patterson, J. L. LARC/Hardin, J. C. 56-Medical Sciences  
LARC/Seiner, J. M.

**NAS 9-16046** **Virginia Commonwealth University** **4928**  
Influence of weightlessness upon automatic cardiovascular control  
*Period* *Obligations*  
01/17/80-10/31/86 FY83: \$679,038 TOTAL: \$917,557  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Exkberg, D. L. JSC/Young, W. J. 59-Life Sci, NEC

**NAGW 213** **Virginia Military Institute** **4929**  
Synthetic sulfurous magmas: Understanding sulfur systematic on lo  
*Period* *Obligations*  
05/01/81-05/31/83 FY83: TOTAL: \$22,550  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schreiber, H. D. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NSG 7355** **Virginia Military Institute** **4930**  
Oxidation-reduction processes in synthetic silicate melts  
*Period* *Obligations*  
06/01/77-12/31/83 FY83: \$13,040 TOTAL: \$119,447  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schreiber, H. D. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**DEN 3-65** **Va Polytechnic Inst & St Univ** **4931**  
Electronically computed D.C. Motor for electric passenger vehicles  
*Period* *Obligations*  
09/13/78-04/15/83 FY83: TOTAL: \$466,532  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Demerdash, N. A. LERC/Maslowski, E. A. 45-Elec Engr  
Lee, F. C.

**NAG 1-68** **Va Polytechnic Inst & St Univ** **4932**  
Optical fiber interferometer for the study of ultrasonic waves in composite materials  
*Period* *Obligations*  
10/01/80-09/30/81 FY83: TOTAL: \$30,536  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Claus, R. O. LARC/Cantrell, J. H., Jr. 13-Physics  
LARC/Heyman, J. S.

**NAG 1-78** **Va Polytechnic Inst & St Univ** **4933**  
Nonequilibrium material effects on behavior of polymeric composite matrices and their related composites  
*Period* *Obligations*  
07/01/80-12/31/81 FY83: TOTAL: \$51,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wilkes, G. L. LARC/Johnston, N. J. 47-Materials Engr  
LARC/Sykes, G. F.

**NAG 1-80** **Va Polytechnic Inst & St Univ** **4934**  
Computational methods of robust controller design for aerodynamic flutter  
*Period* *Obligations*  
06/15/80-11/14/81 FY83: TOTAL: \$45,334  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Anderson, L. R. LARC/Newsom, J. R. 41-Aero Engr  
LARC/Sobieski, J.

**NAG 1-89** **Va Polytechnic Inst & St Univ** **4935**  
Chemical modification of semiconductor surfaces  
*Period* *Obligations*  
09/01/80-11/30/81 FY83: TOTAL: \$19,806  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Finklea, H. O. LARC/Byvik, C. E. 19-Phys Sci, NEC  
LARC/Conway, E. J.

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

<b>NAG 1-106</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4936</b>
	Poly (aryl ethers): Effect of polymer structure on radiation resistance		
	<i>Period</i>	<i>Obligations</i>	
	11/01/80-10/31/81	FY83: TOTAL: \$36,808	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	McGrath, J. E.	LARC/Sykes, G. F.	47-Materials Engr
<b>NAG 1-119</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4937</b>
	Influence of small surface roughness on turbulent flow over solid and porous surface		
	<i>Period</i>	<i>Obligations</i>	
	11/04/80-12/31/81	FY83: TOTAL: \$41,213	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Schetz, J. A.	LARC/Hefner, J. N.	41-Aero Engr
		LARC/Bushnell, D. M.	
<b>NAG 1-123</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4938</b>
	Modeling of temperature and suspended sediment in the John H. Kerr Reservoir, Virginia/North Carolina		
	<i>Period</i>	<i>Obligations</i>	
	12/01/80-11/30/82	FY83: TOTAL: \$70,334	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Kuo, C. Y.	LARC/Whitlock, C. H.	44-Civil Engr
		LARC/Curfsman, H. J.	
<b>NAG 1-127</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4939</b>
	Investigation of adhesive/adherend and fiber matrix interactions		
	<i>Period</i>	<i>Obligations</i>	
	02/01/81-07/31/82	FY83: TOTAL: \$31,078	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Wightman, J. P.	LARC/Progar, D. J.	12-Chemistry
		LARC/Nelson, J.	
<b>NAG 1-128</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4940</b>
	International union of theoretical and applied mechanics symposium on mechanics of composite		
	<i>Period</i>	<i>Obligations</i>	
	01/01/81-12/31/82	FY83: TOTAL: \$15,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Herakovich, C. T.	LARC/Davis, J. G., Jr.	49-Engr, NEC
		LARC/Tenney, D. R.	
<b>NAG 1-132</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4941</b>
	Lightning upset methodology research		
	<i>Period</i>	<i>Obligations</i>	
	12/15/80-12/14/81	FY83: TOTAL: \$35,627	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Tront, J. G.	LARC/Pitts, F. L.	45-Elec Engr
<b>NAG 1-139</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4942</b>
	Quasi-Newton methods for nonlinear structural analysis and synthesis		
	<i>Period</i>	<i>Obligations</i>	
	01/01/81-06/30/82	FY83: TOTAL: \$42,066	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Kamat, M. P.	LARC/Hayduk, R. J.	49-Engr, NEC
		LARC/Thomson, R. G.	
<b>NAG 1-145</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4943</b>
	Development and application of optimum sensitivity analysis of structures		
	<i>Period</i>	<i>Obligations</i>	
	01/08/81-12/31/83	FY83: \$50,004 TOTAL: \$98,960	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hallauer, W. L.	LARC/Sobieski, J. E.	41-Aero Engr
<b>NAG 1-156</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4944</b>
	Measurement of unsteady pressures on compressor blades		
	<i>Period</i>	<i>Obligations</i>	
	03/24/81-09/30/83	FY83: \$20,000 TOTAL: \$112,109	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	O'brien, W. F.	LARC/Chestnutt, D.	46-Mech Engr
<b>NAG 1-168</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4945</b>
	Structural optimization for improved damage tolerance		
	<i>Period</i>	<i>Obligations</i>	
	09/01/81-10/15/83	FY83: \$44,237 TOTAL: \$110,215	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Haftka, R. T.	LARC/Starnes, J. H.	41-Aero Engr
<b>NAG 1-174</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4946</b>
	Chip level simulation of Fault tolerant computers		
	<i>Period</i>	<i>Obligations</i>	
	06/01/81-05/31/83	FY83: TOTAL: \$142,870	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Armstrong, J. R.	LARC/Migneault, G. E.	29-Math/Cmputer, NEC
		LARC/Thomas, R. M., Jr.	
<b>NAG 1-188</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4947</b>
	Remote sensing of water quality		
	<i>Period</i>	<i>Obligations</i>	
	05/01/81-04/30/82	FY83: TOTAL: \$18,310	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Giles, H., Jr.	LARC/Hypes, W. D.	39-Env Sci, NEC
	Koeln, G. T.	LARC/Whitlock, C. H.	
<b>NAG 1-192</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4948</b>
	Acousto-optical techniques in ultrasonic transducer calibration for materials inspection		
	<i>Period</i>	<i>Obligations</i>	
	10/01/81-09/30/82	FY83: TOTAL: \$36,205	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Claus, R. O.	LARC/Cantrell, J. H.	13-Physics
		LARC/Heyman, J. S.	
<b>NAG 1-193</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4949</b>
	Measurement of displacement around holes in composite plates subjected to quasi-static compression		
	<i>Period</i>	<i>Obligations</i>	
	06/01/81-05/31/82	FY83: TOTAL: \$35,920	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Duke, J. C.	LARC/Starnes, J. H.	41-Aero Engr
	Post, D.		

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**NAG 1-201**      **Va Polytechnic Inst & St Univ**      **4950**  
 Compression strength failure mechanisms in unidirectional composite laminates containing a hole  
*Period*      *Obligations*  
 06/15/81-09/30/83      FY83: \$2,146      TOTAL: \$28,417  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Johnson, E. R.      LARC/Starnes, J. H., Jr.      41-Aero Engr

**NAG 1-246**      **Va Polytechnic Inst & St Univ**      **4957**  
 Micro-bore high pressure liquid chromatograph (HPLC) columns for direct coupling to mass spectrometry  
*Period*      *Obligations*  
 01/01/82-06/15/83      FY83:      TOTAL: \$29,933  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 McNair, H. M.      LARC/Young, P. R.      12-Chemistry

**NAG 1-203**      **Va Polytechnic Inst & St Univ**      **4951**  
 Climb dash and climb-cruise real-time calculations  
*Period*      *Obligations*  
 07/01/81-06/30/84      FY83: \$49,966      TOTAL: \$155,500  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Kelley, H. J.      LARC/Gracey, C.      41-Aero Engr  
 Cliff, E. M.      LARC/Price, D. B.

**NAG 1-248**      **Va Polytechnic Inst & St Univ**      **4958**  
 Surface analysis in composite bonding  
*Period*      *Obligations*  
 03/01/82-05/31/83      FY83:      TOTAL: \$28,243  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Wightman, J. P.      LARC/Progar, D. J.      19-Phys Sci, NEC  
                                  LARC/StClair, T. L.

**NAG 1-220**      **Va Polytechnic Inst & St Univ**      **4952**  
 Three-dimensional hypersonic viscous flows of finite-rate chemically reacting gases  
*Period*      *Obligations*  
 11/01/81-10/31/82      FY83:      TOTAL: \$84,637  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Lewis, C. H.      LARC/Zoby, E. V.      41-Aero Engr

**NAG 1-252**      **Va Polytechnic Inst & St Univ**      **4959**  
 The role of the surface oxide layer in titanium bonding  
*Period*      *Obligations*  
 03/01/82-05/31/83      FY83:      TOTAL: \$30,245  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Wightman, J. P.      LARC/Progar, D. J.      19-Phys Sci, NEC  
                                  LARC/St. Clair, T. L.

**NAG 1-224**      **Va Polytechnic Inst & St Univ**      **4953**  
 Automated sizing of aerospace structures under multiple constraints  
*Period*      *Obligations*  
 11/01/81-10/31/83      FY83: \$67,276      TOTAL: \$116,936  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Haftka, R. T.      LARC/Adelman, H. M.      41-Aero Engr

**NAG 1-263**      **Va Polytechnic Inst & St Univ**      **4960**  
 Analysis and acoustooptical measurements of bulk and surface acoustic fields  
*Period*      *Obligations*  
 10/01/82-09/30/83      FY83:      TOTAL: \$36,211  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Claus, R. O.      LARC/Cantrell, J. H., Jr.      13-Physics  
                                  LARC/Heyman, J. S.

**NAG 1-225**      **Va Polytechnic Inst & St Univ**      **4954**  
 Identification and control of structures in space  
*Period*      *Obligations*  
 11/01/81-03/31/84      FY83: \$51,238      TOTAL: \$86,196  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Meirovitch, L.      LARC/Williams, J. P.      42-Astro Engr  
 Barah, H.      LARC/Montgomery, R. C.

**NAG 1-264**      **Va Polytechnic Inst & St Univ**      **4961**  
 Fracture testing of thick laminates of graphite epoxy composites  
*Period*      *Obligations*  
 03/29/82-08/31/83      FY83:      TOTAL: \$46,006  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Morris, D. H.      LARC/Poe, C. C., Jr.      47-Materials Engr  
                                  LARC/Phillips, E. P.

**NAG 1-227**      **Va Polytechnic Inst & St Univ**      **4955**  
 Viscoelastic characterization and lifetime predictions of structural adhesives  
*Period*      *Obligations*  
 11/01/81-10/31/83      FY83: \$30,000      TOTAL: \$49,997  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Brinson, H. F.      LARC/Johnson, W. S.      46-Mech Engr  
                                  LARC/Everett, R. A., Jr.

**NAG 1-274**      **Va Polytechnic Inst & St Univ**      **4962**  
 An experimental study of pressures on 600 delta wings with leading edge vortex flaps  
*Period*      *Obligations*  
 07/01/82-07/31/83      FY83:      TOTAL: \$27,257  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Marchman, J. F., III      LARC/Frink, N. T.      41-Aero Engr

**NAG 1-232**      **Va Polytechnic Inst & St Univ**      **4956**  
 Fatigue damage in notched composite laminates under tension-tension cyclic loads  
*Period*      *Obligations*  
 01/01/82-03/31/83      FY83:      TOTAL: \$72,087  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Stinchcomb, W. W.      LARC/O'Brien, T. K.      41-Aero Engr  
 Reifsnider, K. L.      LARC/Whitcomb, J. D.  
 Henneke, E. G.

**NAG 1-280**      **Va Polytechnic Inst & St Univ**      **4963**  
 Three-dimensional interactions of disturbances in boundary layers  
*Period*      *Obligations*  
 06/01/82-09/15/84      FY83: \$110,997      TOTAL: \$170,997  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Saric, W. S.      LARC/Maddalon, D. V.      41-Aero Engr  
                                  LARC/Wagner, R. D.

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<b>NAG 1-289</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4964</b>	Computation of nonlinear supersonic flows using a stream function approach
Period 06/21/82-09/20/82	FY83:	Obligations	TOTAL: \$13,098
Prin. Invest. Grossman, B.	NASA Tech. Officer LARC/Dwoyer, D. L. LARC/Townsend, J. C.	CASE Category 41-Aero Engr	
<b>NAG 1-291</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4965</b>	Displacement measurements on stiffened composite panels
Period 08/15/82-01/14/83	FY83:	Obligations	TOTAL: \$4,977
Prin. Invest. Post, D. Herakovich, C. T.	NASA Tech. Officer LARC/Williams, J. G. LARC/Lopez, O. F.	CASE Category 41-Aero Engr	
<b>NAG 1-298</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4966</b>	Extension of the 3-D finite-rate flowfield code for shuttle applications
Period 10/06/82-10/05/83	FY83: \$50,147	Obligations	TOTAL: \$50,147
Prin. Invest. Lewis, C. H.	NASA Tech. Officer LARC/Zoby, E. V. LARC/Gnoffo, P. A.	CASE Category 41-Aero Engr	
<b>NAG 1-299</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4967</b>	An analysis of wave interactions in swept-wing flows
Period 10/07/82-01/31/84	FY83: \$61,427	Obligations	TOTAL: \$61,427
Prin. Invest. Saric, W. S.	NASA Tech. Officer LARC/Maddalon, D. V. LARC/Wagner, R. D.	CASE Category 41-Aero Engr	
<b>NAG 1-300</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4968</b>	Fundamental approach to the sticking of insect residues to aircraft wings
Period 12/16/82-12/15/83	FY83: \$51,722	Obligations	TOTAL: \$51,722
Prin. Invest. Eiss, N. S. Wightman, J. P.	NASA Tech. Officer LARC/Somers, D. M. LARC/Johnston, N. J.	CASE Category 49-Engr, NEC	
<b>NAG 1-331</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4969</b>	Environmentally stable polymers and coatings for space applications
Period 02/01/83-01/31/84	FY83: \$60,008	Obligations	TOTAL: \$60,008
Prin. Invest. McGrath, J. E.	NASA Tech. Officer LARC/Sykes, G. F.	CASE Category 39-Env Sci, NEC	
<b>NAG 1-337</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4970</b>	A new approach to the computation of supersonic rotational flows
Period 02/01/83-01/31/84	FY83: \$45,930	Obligations	TOTAL: \$45,930
Prin. Invest. Grossman, B.	NASA Tech. Officer LARC/Bradley, P. F. LARC/Dwoyer, D. L.	CASE Category 41-Aero Engr	
<b>NAG 1-343</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4971</b>	NASA materials science and engineering program
Period 03/01/83-02/29/84	FY83: \$929,634	Obligations	TOTAL: \$929,634
Prin. Invest. Torgersen, P. E.	NASA Tech. Officer LARC/Blankenship, C. P. LARC/Teichman, L. A.	CASE Category 47-Materials Engr	
<b>NAG 1-359</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4972</b>	Deformation measurements of composite multi-span beam rear specimens by moiré interferometry
Period 05/01/83-12/31/83	FY83: \$15,009	Obligations	TOTAL: \$15,009
Prin. Invest. Post, D. Herakovich, C. T.	NASA Tech. Officer LARC/Williams, J. G. LARC/Starnes, J. H.	CASE Category 41-Aero Engr	
<b>NAG 1-369</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4973</b>	Piezoelectric array and optical fiber transducers for applications in nondestructive evaluation
Period 10/01/83-09/30/84	FY83: \$39,819	Obligations	TOTAL: \$39,819
Prin. Invest. Claus, R. O.	NASA Tech. Officer LARC/Cantrell, J. H. LARC/Heyman, J. S.	CASE Category 45-Elec Engr	
<b>NAG 1-389</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4974</b>	Composite laminate free edge reinforcement concepts
Period 09/15/83-09/14/84	FY83: \$51,449	Obligations	TOTAL: \$51,449
Prin. Invest. Jones, R. M.	NASA Tech. Officer LARC/Shuart, M. J.	CASE Category 41-Aero Engr	
<b>NAG 1-390</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4975</b>	An analytical investigation of synchrophasing as a means of aircraft interior noise control
Period 09/15/83-09/14/84	FY83: \$77,565	Obligations	TOTAL: \$77,565
Prin. Invest. Fuller, C. R.	NASA Tech. Officer LARC/Chestnutt, D.	CASE Category 41-Aero Engr	
<b>NAG 1-393</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4976</b>	New horizons in science briefings
Period 08/01/83-11/30/83	FY83: \$5,000	Obligations	TOTAL: \$5,000
Prin. Invest. Nystrom, L. A.	NASA Tech. Officer LARC/Massenberg, S. E.	CASE Category 41-Aero Engr	
<b>NAG 2-17</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4977</b>	Comparative evaluation of workload estimation techniques in piloting tasks
Period 01/15/80-03/14/84	FY83: \$64,894	Obligations	TOTAL: \$306,853
Prin. Invest. Wierwille, W. W.	NASA Tech. Officer ARC/Hart, S. G.	CASE Category 99-Multi-Discip	

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<b>NAG 3-78</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4978</b>	Environmental degradation of engineering materials II
Period	Obligations		
01/01/81-12/31/81	FY83:	TOTAL: \$3,385	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Louthan, M. R., Jr.	LERC/Stephens, J. R.	47-Materials Engr	
McNitt, R. P.			
Sisson, R. D., Jr.			
<b>NAG 3-99</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4979</b>	High power transistor evaluations for electric vehicle applications
Period	Obligations		
09/15/80-09/13/83	FY83:	TOTAL: \$174,822	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Lee, F. C.	LERC/Maslowski, E. A.	45-Elec Engr	
Chen, D. D.			
<b>NAG 3-124</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4980</b>	Characterization of gas turbine combustor noise sources from far-field measurements
Period	Obligations		
11/03/80-12/15/82	FY83:	TOTAL: \$66,394	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Mahan, J. R.	LERC/Krejsa, E. A.	41-Aero Engr	
<b>NAG 3-172</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4981</b>	Study of the stress wave factor technique for the characterization of composite materials
Period	Obligations		
04/01/81-12/29/83	FY83: \$35,127	TOTAL: \$73,941	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Henneke, E. G.	LERC/Vary, A.	47-Materials Engr	
Stinchcomb, W. W.			
Duke, J. C., Jr.			
<b>NAG 3-208</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4982</b>	Graduate research projects in nonlinear and 3-D structural analysis
Period	Obligations		
08/29/81-08/26/84	FY83: \$30,000	TOTAL: \$89,933	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Reddy, J. N.	LERC/Chamis, C. C.	41-Aero Engr	
	LERC/Hirschbein, M. S.		
<b>NAG 3-220</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4983</b>	Implementation of input filter compensation for switching regulators
Period	Obligations		
10/15/81-10/13/83	FY83:	TOTAL: \$20,647	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Lee, F. C.	LERC/Kolecki, J. C.	45-Elec Engr	
Kelkar, S.	LERC/Banks, B. A.		
<b>NAG 3-240</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4984</b>	Feasibility study of bipolar-fet hybrid power transistors using discrete devices
Period	Obligations		
12/15/81-04/13/84	FY83: \$45,954	TOTAL: \$72,601	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Chen, D. D.	LERC/Sundberg, G. R.	45-Elec Engr	
<b>NAG 3-323</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4985</b>	Ultrasonic stress wave characterization of composite materials
Period	Obligations		
10/01/82-11/30/83	FY83:	TOTAL: \$50,418	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Henneke, E. G., II	LERC/Vary, A.	47-Materials Engr	
Duke Jr., J. C.			
Stinchcomb, W. W.			
<b>NAG 3-347</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4986</b>	Optimization of cascade blade mounting
Period	Obligations		
10/30/82-10/29/83	FY83: \$45,784	TOTAL: \$45,784	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Haftka, R. T.	LERC/Brown, G. V.	41-Aero Engr	
<b>NAG 3-405</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4987</b>	Computer modeling and analysis of a bidirectional four-quadrant power converter
Period	Obligations		
03/16/83-09/15/84	FY83: \$50,307	TOTAL: \$50,307	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Lee, F. C.	LERC/Hansen, I. G.	45-Elec Engr	
<b>NAG 3-438</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4988</b>	Fatigue growth of small cracks
Period	Obligations		
06/25/83-10/24/84	FY83: \$99,884	TOTAL: \$99,884	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Dowling, N. E.	LERC/Orange, T. W.	47-Materials Engr	
	LERC/Shannon, J. L., Jr.		
<b>NAG 8-314</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4989</b>	X-ray emission from optically-quiet compact radio sources, Lacertae objects and from bright optically selected quasars under the High Energy Astronomical Observatory
Period	Obligations		
02/01/80-07/31/83	FY83:	TOTAL: \$2,895	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Odell, S. L.	MSFC/Jones, J. B.	11-Astronomy	
Ledden, J. E.			
Condon, J. J.			
<b>NAG 8-348</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4990</b>	Coordinated High Energy Astronomical Observatory-2 observations of low-frequency variable radio sources
Period	Obligations		
06/20/80-06/20/83	FY83:	TOTAL: \$7,475	
Prin. Invest.	NASA Tech. Officer	CASE Category	
O'dell, S. L.	MSFC/Stone, J. F.	11-Astronomy	
Dennison, B. K.			
<b>NAG 8-432</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4991</b>	X-ray imaging of Crab-like supernova remnants and the Puppis A supernova remnant
Period	Obligations		
05/01/82-04/30/84	FY83:	TOTAL: \$12,706	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Becker, R.	MSFC/Stone, J. F.	11-Astronomy	

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<b>NAGW 488</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4992</b>
	Relationship between high-and low-grade archeau terraus: Supplications for early Earth paleogeography		
	<i>Period</i>	<i>Obligations</i>	
	08/01/83-03/31/84	FY83: \$4,900	TOTAL: \$4,900
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Eriksson, K. A.	HQ-EL/Williams, R. J.	32-Geological Sci
		HQ-EL/French, B. M.	
<b>NAS 1-15080</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4993</b>
	Research in the area of physical sciences		
	<i>Period</i>	<i>Obligations</i>	
	08/25/77-09/30/81	FY83: \$723	TOTAL: \$274,801
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Unavailable	LARC/Hohl, F.	99-Multi-Discip
<b>NAS 1-16508</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4994</b>
	Analysis of Earth radiation budget/Earth radiation budget experiment sensors		
	<i>Period</i>	<i>Obligations</i>	
	11/13/80-07/15/82	FY83:	TOTAL: \$54,679
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Mahan, J. R.	LARC/Hinton, D. E.	31-Atmos Sci
		LARC/Jalink, A.	
<b>NAS 1-17100</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4995</b>
	Research in the area of physical and life sciences		
	<i>Period</i>	<i>Obligations</i>	
	09/20/82-09/19/85	FY83: \$51,142	TOTAL: \$77,842
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Unavailable	LARC/Prior, E. J.	99-Multi-Discip
<b>NAS 1-17256</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4996</b>
	A computer simulation model for managing aircraft survivability		
	<i>Period</i>	<i>Obligations</i>	
	12/22/82-12/21/83	FY83: \$150,000	TOTAL: \$150,000
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Drew, D. R.	LARC/Sobieski, J.	49-Engr, NEC
<b>NAS 5-22577</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4997</b>
	Communications link characterization study		
	<i>Period</i>	<i>Obligations</i>	
	09/08/76-04/07/85	FY83:	TOTAL: \$896,175
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Bostian, C. W.	GSFC/Hirschmann, E.	45-Elec Engr
	Stutzman, W. L.		
	Wiley, P. H.		
<b>NAS 9-16281</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4998</b>
	Brushless D. C. Motor and power conditioner Fault models		
	<i>Period</i>	<i>Obligations</i>	
	01/01/81-09/15/83	FY83:	TOTAL: \$99,515
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Nehl, T. W.	JSC/Edge, J. T.	22-Computer Science
<b>NCC 1-10</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4999</b>
	Environmental effects on advanced aerospace materials		
	<i>Period</i>	<i>Obligations</i>	
	08/01/79-12/31/82	FY83:	TOTAL: \$347,713
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Shields, G.	LARC/Tenney, D. R.	39-Env Sci, NEC
	Unnam, J.	LARC/Clark, R. C.	
<b>NCC 1-15</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5000</b>
	Composite materials research and education		
	<i>Period</i>	<i>Obligations</i>	
	09/01/79-02/29/84	FY83:	TOTAL: \$736,896
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Ingram, J.	LARC/Tenney, D. R.	49-Engr, NEC
	Hyer, M. W.	LARC/Dexter, H. B.	
<b>NCC 1-62</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5001</b>
	Improving coatings for advanced carbon-carbon composites		
	<i>Period</i>	<i>Obligations</i>	
	01/07/82-01/06/83	FY83:	TOTAL: \$34,978
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Brown, J. J.	LARC/Tenney, D. R.	47-Materials Engr
		LARC/Ransone, P. O.	
<b>NCC 1-63</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5002</b>
	Poly (aryl ethers) and relater polysiloxane copolymer molecular coatings preparation and radiation degradation		
	<i>Period</i>	<i>Obligations</i>	
	01/20/82-01/19/83	FY83:	TOTAL: \$49,999
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	McGrath, J. E.	LARC/Sykes, G. F.	12-Chemistry
<b>NCC 1-71</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5003</b>
	High Reynolds number, flat-plate experiments in the national transonic facility		
	<i>Period</i>	<i>Obligations</i>	
	07/26/82-07/25/84	FY83:	TOTAL: \$114,624
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Saric, W. S.	LARC/Barnwell, R. W.	41-Aero Engr
		LARC/Peterson, J. B.	
<b>NCC 2-71</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5004</b>
	The accelerated characterization of polymer based fiber rein- forced composites		
	<i>Period</i>	<i>Obligations</i>	
	10/01/80-09/30/84	FY83: \$40,125	TOTAL: \$245,882
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Brinson, H. F.	ARC/Nelson, H. G.	47-Materials Engr
<b>NGT 47-004-800</b>	<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5005</b>
	Computational study of leading edge vortex flaps graduate student researcher's program		
	<i>Period</i>	<i>Obligations</i>	
	06/01/80-05/31/83	FY83:	TOTAL: \$34,750
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Marchman, J. F.	HQ-LB/Carter, C. H.	41-Aero Engr



**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

<b>NGT 47-004-801</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5006</b>	
Graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
06/01/81-05/31/84	FY83: \$15,000	TOTAL: \$40,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Telionis, D. P.	HQ-LB/Owens, F. C.	41-Aero Engr	
<b>NGT 47-004-802</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5007</b>	
Graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
09/01/82-08/31/84	FY83: \$14,500	TOTAL: \$27,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Marchman, J. F.	HQ-LB/Owens, F. C.	41-Aero Engr	
<b>NGT 47-004-803</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5008</b>	
Graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
06/01/82-05/31/84	FY83: \$14,500	TOTAL: \$27,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Schetz, J. A.	HQ-LB/Owens, F. C.	41-Aero Engr	
<b>NGT 47-004-804</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5009</b>	
NASA graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
07/28/83-07/27/84	FY83: \$15,000	TOTAL: \$15,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Regan, J. T.	HQ-LB/Owens, F. C.	49-Engr, NEC	
<b>NGT 47-004-805</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5010</b>	
NASA graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
04/15/83-04/14/84	FY83: \$15,000	TOTAL: \$15,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
O'brien, W. F.	HQ-LB/Owens, F. C.	41-Aero Engr	
<b>NGT 47-004-806</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5011</b>	
NASA graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
06/01/83-05/31/84	FY83: \$15,000	TOTAL: \$15,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Greesman, B.	HQ-LB/Owens, F. C.	41-Aero Engr	
<b>NSG 1085</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5012</b>	
Kinetics of the reactions of acid anhydrides with aromatic amines in aprotic solvents			
<i>Period</i>	<i>Obligations</i>		
07/01/74-09/30/81	FY83:	TOTAL: \$93,519	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mason, J. G.	LARC/Young, P. R.	12-Chemistry	
<b>NSG 1255</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5013</b>	
Application of stability theory to laminar flow control			
<i>Period</i>	<i>Obligations</i>		
10/01/75-10/31/81	FY83:	TOTAL: \$348,400	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Nayfeh, A. H.	LARC/Hefner, J. N.	41-Aero Engr	
	LARC/Bushnell, D. M.		
<b>NSG 1262</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5014</b>	
Subsonic steady and unsteady aerodynamic loads missiles and aircraft			
<i>Period</i>	<i>Obligations</i>		
12/01/75-09/15/82	FY83:	TOTAL: \$157,866	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mook, D. T.	LARC/Yates, E. C., Jr.	41-Aero Engr	
Nayfeh, A. H.			
<b>NSG 1354</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5015</b>	
Study of an automatic trajectory following control system			
<i>Period</i>	<i>Obligations</i>		
10/15/76-12/31/81	FY83:	TOTAL: \$113,244	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Vanlandingham, H. F.	LARC/Creedon, J. F.	41-Aero Engr	
Moose, R. L.	LARC/Hueschen, R. M.		
<b>NSG 1428</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5016</b>	
The incorporation of metal ions polyimides			
<i>Period</i>	<i>Obligations</i>		
07/01/77-05/31/83	FY83:	TOTAL: \$209,105	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Taylor, L. T.	LARC/St Clair, A. K.	12-Chemistry	
	LARC/St Clair, T. L.		
<b>NSG 1524</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5017</b>	
New aromatic polyamides containing n-propargyl groups as potential cross linking functions			
<i>Period</i>	<i>Obligations</i>		
06/01/78-02/28/83	FY83:	TOTAL: \$120,430	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wolfe, J. F.	LARC/St Clair, T. L.	12-Chemistry	
<b>NSG 1598</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5018</b>	
Selected parameters to minimize community annoyance from airport noise			
<i>Period</i>	<i>Obligations</i>		
04/01/79-03/31/83	FY83:	TOTAL: \$130,069	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Frail, L.	LARC/Deloach, R.	99-Multi-Discip	
<b>NSG 1608</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5019</b>	
Experiments to verify non-parallel stability theory			
<i>Period</i>	<i>Obligations</i>		
04/01/79-01/15/83	FY83:	TOTAL: \$292,986	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Saric, W. S.	LARC/Hefner, J. N.	41-Aero Engr	
	LARC/Bushnell, D. M.		
<b>NSG 1621</b>			
<b>Va Polytechnic Inst &amp; St Univ</b>		<b>5020</b>	
Use of two-dimensional transmission photoelastic models to study the stresses in double lap bolted joints			
<i>Period</i>	<i>Obligations</i>		
09/01/79-06/15/83	FY83:	TOTAL: \$84,758	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Hyer, M. W.	LARC/Baker, D. J.	47-Materials Engr	
	LARC/Dexter, H. B.		

# **NASA'S UNIVERSITY PROGRAM** **VIRGINIA (Continued)**

**NSG 2301** **Va Polytechnic Inst & St Univ** **5021**  
Near-wall similarity in three-dimensional turbulent flows  
*Period* *Obligations*  
04/01/78-03/31/84 FY83: \$35,000 TOTAL: \$328,783  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pierce, F. J. ARC/Marvin, J. G. 41-Aero Engr  
ARC/Rubeshin, M. W.

**NSG 3239** **Va Polytechnic Inst & St Univ** **5022**  
Investigation of torsional-axial-lateral coupled response of geared systems  
*Period* *Obligations*  
01/02/79-01/15/84 FY83: \$23,860 TOTAL: \$220,152  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mitchell, L. D. LERC/Flemings, D. P. 41-Aero Engr  
LERC/Kascak, A. F.

**NAG 1-374** **Virginia State University** **5023**  
Annealing problems in proton and electron and electron irradiated GaAs solar cells  
*Period* *Obligations*  
05/16/83-05/15/84 FY83: \$35,442 TOTAL: \$35,442  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stith, J. J. LARC/Wilson, J. W. 19-Phys Sci, NEC  
LARC/Conway, E. J.

**NAG 1-416** **Virginia State University** **5024**  
Solid state physics research program  
*Period* *Obligations*  
01/01/84-12/31/84 FY83: \$185,259 TOTAL: \$185,259  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stronach, C. E. LARC/Wilson, J. W. 19-Phys Sci, NEC  
Davenport, J. C. LARC/Conway, E. J.  
Stith, J. J.

**NSG 1342** **Virginia State University** **5025**  
Material science and solid state physics studies with positive muon spin precession  
*Period* *Obligations*  
01/01/77-01/31/84 FY83: \$40,000 TOTAL: \$139,824  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McCoy, R. M. LARC/Singh, J. J. 13-Physics

## **WASHINGTON**

**NAG 1-41** **University of Washington** **5026**  
Radiation viewfactor analysis  
*Period* *Obligations*  
03/01/80-09/15/84 FY83: \$49,693 TOTAL: \$193,931  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Emery, A. F. LARC/Pittman, C. M. 46-Mech Engr  
Kippenham, C. J. LARC/Wieting, A. R.

**NAG 1-149** **University of Washington** **5027**  
Air-sea interaction studies for satellite measurements  
*Period* *Obligations*  
03/01/81-02/28/83 FY83: TOTAL: \$125,534  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Brown, R. A. LARC/Grantham, W. L. 33-Oceanography  
Katsaros, K.  
Businger, J.

**NAG 1-176** **University of Washington** **5028**  
Study of blackbody-pumped lasers  
*Period* *Obligations*  
04/01/81-10/31/83 FY83: \$42,542 TOTAL: \$133,214  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Christiansen, W. H. LARC/Deyoung, R. J. 13-Physics  
LARC/Conway, E. J.

**NAG 1-327** **University of Washington** **5029**  
Research related to the technology of space energy conversion systems  
*Period* *Obligations*  
02/08/83-02/07/84 FY83: \$191,730 TOTAL: \$191,730  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hertzberg, A. LARC/Conway, E. J. 42-Astro Engr  
Bruckner, A. P. LARC/Deyoung, R.  
Mattick, A. T.

**NAG 2-66** **University of Washington** **5030**  
Wave dynamics and transport in the stratosphere  
*Period* *Obligations*  
10/01/80-10/31/83 FY83: \$113,540 TOTAL: \$343,040  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Holton, J. R. ARC/Summers, A. L. 31-Atmos Sci

**NAG 2-120** **University of Washington** **5031**  
The modelling of fibrous refractory composite insulation for development studies  
*Period* *Obligations*  
07/01/81-12/31/83 FY83: \$26,000 TOTAL: \$90,490  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mueller, J. I. ARC/Goldstein, H. E. 47-Materials Engr  
Bollard, R. J.

**NAG 3-7** **University of Washington** **5032**  
In service shaping of abradable seals  
*Period* *Obligations*  
12/01/79-01/30/84 FY83: \$30,000 TOTAL: \$148,389  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wolak, J. LERC/Kascak, A. F. 46-Mech Engr  
Emery, A. F. LERC/Kiraly, L. J.

**NAG 3-16** **University of Washington** **5033**  
Research related to the technology of radiation machinery and high power gas lasers  
*Period* *Obligations*  
12/17/79-01/14/83 FY83: TOTAL: \$494,800  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hertzberg, A. LERC/Mroz, T. S. 13-Physics

**NASA'S UNIVERSITY PROGRAM  
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<b>NAG 3-227</b>		<b>University of Washington</b>		<b>5034</b>
Interactive computer modelling of combustion chemistry				
Period	Obligations			
11/15/81-11/14/83	FY83:	TOTAL: \$100,320		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Pratt, D. T.	LERC/Marek, C. J.	46-Mech Engr		

<b>NAG 3-256</b>		<b>University of Washington</b>		<b>5035</b>
Investigation of the interaction of a skewed shock wave and a turbulent boundary layer in an axi-symmetric flow channel				
Period	Obligations			
02/15/82-10/01/83	FY83:	TOTAL: \$50,000		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Childs, M. E.	LERC/Hingst, W. R.	41-Aero Engr		

<b>NAG 3-376</b>		<b>University of Washington</b>		<b>5036</b>
Investigation of three-dimensional boundary layer flows in subsonic diffusers				
Period	Obligations			
12/05/82-12/04/83	FY83: \$75,000	TOTAL: \$75,000		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Childs, M. E.	LERC/Hingst, W. R.	41-Aero Engr		
Gessner, F. B.				

<b>NAG 5-45</b>		<b>University of Washington</b>		<b>5037</b>
Observations of selected astronomical objects				
Period	Obligations			
04/15/80-02/14/84	FY83: \$12,600	TOTAL: \$34,146		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Bohm, K. H.	GSFC/Kondo, Y.	11-Astronomy		
Cardelli, J. A.				

<b>NAG 5-207</b>		<b>University of Washington</b>		<b>5038</b>
Massive star mass loss during stellar evolution				
Period	Obligations			
09/07/81-01/06/84	FY83: \$21,200	TOTAL: \$44,702		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Hodge, P. W.	GSFC/Kondo, Y.	11-Astronomy		
Bohm-vitense, E.				

<b>NAG 5-233</b>		<b>University of Washington</b>		<b>5039</b>
Diagnostic studies of the atmospheric circulation				
Period	Obligations			
05/01/82-10/31/83	FY83:	TOTAL: \$17,380		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Holton, J. R.	GSFC/Kalnay, E.	31-Atmos Sci		
Edmon, H. J., Jr.				

<b>NAG 5-342</b>		<b>University of Washington</b>		<b>5040</b>
Sensitive galaxian halo probe: Ultraviolet excess objects missing alpha				
Period	Obligations			
07/01/83-12/31/83	FY83: \$10,000	TOTAL: \$10,000		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Margon, B.	GSFC/Kondo, Y.	11-Astronomy		
York, D.				
Jenkins, E. B.				

<b>NAG 5-354</b>		<b>University of Washington</b>		<b>5041</b>
Intercomparison of cycles and electro underflight to satellite data				
Period	Obligations			
08/01/83-07/31/84	FY83: \$44,345	TOTAL: \$44,345		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Katsaros, K. B.	GSFC/Hwang, P.	31-Atmos Sci		

<b>NAG 5-357</b>		<b>University of Washington</b>		<b>5042</b>
Mass loss and photospheric structure in early type spectrum variables				
Period	Obligations			
08/01/83-07/31/84	FY83: \$10,200	TOTAL: \$10,200		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Brown, D.	GSFC/Kondo, Y.	11-Astronomy		
Shore, S. N.				
Barker, P. K.				

<b>NAG 5-363</b>		<b>University of Washington</b>		<b>5043</b>
Research relative to particle acceleration at interplanetary shocks				
Period	Obligations			
08/15/83-08/14/84	FY83: \$19,267	TOTAL: \$19,267		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Potter, D. W.	GSFC/Wales, R. O.	31-Atmos Sci		

<b>NAG 5-373</b>		<b>University of Washington</b>		<b>5044</b>
Study of energetic particle fluxes in and beyond the Earth's data magnetosphere				
Period	Obligations			
10/01/83-11/30/83	FY83: \$10,000	TOTAL: \$10,000		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Parks, G. K.	GSFC/Wales, R. O.	31-Atmos Sci		

<b>NAG 5-604</b>		<b>University of Washington</b>		<b>5045</b>
Middle atmospheric electric fields over thunderstorm				
Period	Obligations			
05/01/82-04/30/84	FY83: \$60,000	TOTAL: \$130,000		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Holzworth, R. H.	GSFC/Early, L. E.	13-Physics		
Parks, G. K.	GSFC/Pless, R. H.			

<b>NAG 8-359</b>		<b>University of Washington</b>		<b>5046</b>
X-ray images of spiral-rich clusters of galaxies				
Period	Obligations			
07/01/80-06/30/83	FY83:	TOTAL: \$4,268		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Sullivan, W. T.	MSFC/Swearingen, J. C.	11-Astronomy		

<b>NAG 8-366</b>		<b>University of Washington</b>		<b>5047</b>
Analysis and interpretation of X-ray timing observations HEAO-1 guest investigator program				
Period	Obligations			
07/27/80-01/27/82	FY83:	TOTAL: \$21,064		
Prin. Invest.	NASA Tech. Officer	CASE Category		
Boynton, P. E.	MSFC/Stone, J. F.	11-Astronomy		
Lamb, F. E.				

**NASA'S UNIVERSITY PROGRAM  
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<b>NAG 8-378</b>	<b>University of Washington</b>		<b>5048</b>
	X-ray and IUE study of ball and CH stars		
	<i>Period</i>	<i>Obligations</i>	
	09/22/80-09/21/82	FY83: TOTAL: \$7,991	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bohm-vitense, E.	MSFC/Stone, J. F.	11-Astronomy	
<b>NAG 8-399</b>	<b>University of Washington</b>		<b>5049</b>
	X-ray and optical study of eruptive symbiotic stars		
	<i>Period</i>	<i>Obligations</i>	
	05/28/81-05/27/83	FY83: TOTAL: \$7,475	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wallerstein, G.	MSFC/Stone, J. F.	11-Astronomy	
Brugel, E. W.			
<b>NAG 8-405</b>	<b>University of Washington</b>		<b>5050</b>
	Three interesting extragalactic X-ray candidate objects		
	<i>Period</i>	<i>Obligations</i>	
	06/18/81-12/17/82	FY83: TOTAL: \$7,142	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Balick, B.	MSFC/Stone, J. F.	11-Astronomy	
Heckman, T.			
Leiden, S.			
<b>NAG 8-411</b>	<b>University of Washington</b>		<b>5051</b>
	Coronae of metal poor stars and X-ray observations of 8 Cephei stars		
	<i>Period</i>	<i>Obligations</i>	
	07/28/81-07/27/83	FY83: TOTAL: \$17,719	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bohm-vitense, E.	MSFC/Stone, J. F.	11-Astronomy	
<b>NAG 8-433</b>	<b>University of Washington</b>		<b>5052</b>
	Discrepant QSO X-ray luminosity function from the High Energy Astronomical Observatory (HEAO-2) data archive		
	<i>Period</i>	<i>Obligations</i>	
	05/01/82-04/30/84	FY83: TOTAL: \$14,485	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Margon, B. H.	MSFC/Stone, J. F.	11-Astronomy	
<b>NAGW 36</b>	<b>University of Washington</b>		<b>5053</b>
	Long term Viking Lander meteorology mission operations and analysis		
	<i>Period</i>	<i>Obligations</i>	
	03/01/80-03/31/84	FY83: \$10,000 TOTAL: \$291,221	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Tillman, J. E.	HQ-EL/Brinton, H. C.	31-Atmos Sci	
	HQ-EL/Briggs, J. A.		
<b>NAGW 85</b>	<b>University of Washington</b>		<b>5054</b>
	Geologic remote sensing		
	<i>Period</i>	<i>Obligations</i>	
	09/16/80-09/15/84	FY83: \$125,000 TOTAL: \$475,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Adams, J. B.	HQ-ET/Vitale, J. A.	32-Geological Sci	
<b>NAGW 199</b>	<b>University of Washington</b>		<b>5055</b>
	Interdisciplinary research and development on the effects of the nature and properties of ceramic materials		
	<i>Period</i>	<i>Obligations</i>	
	07/01/81-06/30/86	FY83: \$400,000 TOTAL: \$1,415,500	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mueller, J. I.	HQ-RT/Bersch, C. F.	47-Materials Engr	
	HQ-RT/Greenfield, M. A.		
<b>NAGW 228</b>	<b>University of Washington</b>		<b>5056</b>
	Analysis of the Viking Lander I surface wind vector for SOLS 45-376		
	<i>Period</i>	<i>Obligations</i>	
	07/15/81-09/30/82	FY83: TOTAL: \$20,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Leovy, C. B.	HQ-EL/Murphy, R. E.	31-Atmos Sci	
<b>NAGW 281</b>	<b>University of Washington</b>		<b>5057</b>
	Lifetime prediction and improvement studies for the Space Shuttle thermal protection system		
	<i>Period</i>	<i>Obligations</i>	
	10/01/81-12/31/83	FY83: \$120,000 TOTAL: \$332,095	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mueller, J. I.	HQ-MR/Greenshields, D.	49-Engr, NEC	
	HQ-MR/Frandsen, N.		
<b>NAGW 303</b>	<b>University of Washington</b>		<b>5058</b>
	Air-sea interaction studies of satellite measurements		
	<i>Period</i>	<i>Obligations</i>	
	04/01/82-03/31/83	FY83: TOTAL: \$97,931	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Brown, R. A.	HQ-EE/McGoldrick, L. F.		
Katsaros, K.	HQ-EE/Wilson, W. S.	33-Oceanography	
Businger, J.			
<b>NAGW 328</b>	<b>University of Washington</b>		<b>5059</b>
	Impact crater scaling laws		
	<i>Period</i>	<i>Obligations</i>	
	06/16/82-05/31/84	FY83: \$37,309 TOTAL: \$71,965	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Holsapple, K. A.	HQ-EL/Quaide, W. L.	32-Geological Sci	
	HQ-EL/Taylor, L. A.		
<b>NAGW 366</b>	<b>University of Washington</b>		<b>5060</b>
	Air sea interaction for satellite measure		
	<i>Period</i>	<i>Obligations</i>	
	04/01/82-06/30/83	FY83: TOTAL: \$35,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Katsaros, K. B.	HQ-EE/McGoldrick, L. F.		
	HQ-EE/Wilson, W. S.	33-Oceanography	
<b>NAGW 412</b>	<b>University of Washington</b>		<b>5061</b>
	Local deformation of sear ice from SAR images		
	<i>Period</i>	<i>Obligations</i>	
	01/01/83-12/31/83	FY83: \$90,000 TOTAL: \$90,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Rothrock, D. A.	HQ-EE/Thomas, R. H.	33-Oceanography	
Thorndike, A. S.	HQ-EE/Wilson, W. S.		

**NASA'S UNIVERSITY PROGRAM  
WASHINGTON (Continued)**

**NAGW 471** **University of Washington** **5062**  
Investigations of stratospheric dynamics and transport using  
Nimbus satellite data  
*Period* *Obligations*  
05/15/83-05/14/84 FY83: \$154,651 TOTAL: \$154,651  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Leovy, C. B. HQ-EE/Watson, R. T. 31-Atmos Sci  
Hartman, D. L. HQ-EE/Chandra, S.

**NAS 1-14341** **University of Washington** **5063**  
Science support for the limb infrared monitor of the stratosphere  
experiment  
*Period* *Obligations*  
04/12/76-09/30/83 FY83: \$20,000 TOTAL: \$158,609  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Leovy, C. B. LARC/Russell, J. M., III 31-Atmos Sci  
LARC/Sullivan, E. M.

**NAS 1-16462** **University of Washington** **5064**  
Scientific investigations for the Earth radiation budget experiment  
(ERBE)  
*Period* *Obligations*  
09/30/80-09/29/85 FY83: \$6,000 TOTAL: \$22,020  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hartman, D. L. LARC/Hall, J. B. 31-Atmos Sci  
Wallace, J. M. LARC/Barkstrom, B. R.

**NAS 1-17108** **University of Washington** **5065**  
Development of techniques for rapid and user-friendly access  
to large and complex data sets through the relational information  
management system (RIMS)  
*Period* *Obligations*  
08/12/82-10/26/83 FY83: TOTAL: \$64,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Erickson, W. J. LARC/Salley, G. C. 22-Computer Science  
Buss, J. A.

**NAS 1-17170** **University of Washington** **5066**  
Numerical prediction of thrust reversing effects of two dimen-  
sional nonaxisymmetric nozzles  
*Period* *Obligations*  
09/20/82-09/28/84 FY83: \$49,320 TOTAL: \$98,345  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
MacCormack, R. W. LARC/Putnam, L. E. 41-Aero Engr  
LARC/Wilmoth, R. G.

**NAS 5-26262** **University of Washington** **5067**  
Nimbus 7 liquid water and vapor data studies  
*Period* *Obligations*  
09/26/80-06/25/83 FY83: TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Katsares, K. B. GSFC/Nelson, D. 31-Atmos Sci

**NAS 5-26301** **University of Washington** **5068**  
Wave dynamics and transport in the middle atmosphere (UA-  
RS)  
*Period* *Obligations*  
10/01/80-12/31/83 FY83: \$9,900 TOTAL: \$20,416  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Holton, J. R. GSFC/Rouzer, L. 31-Atmos Sci

**NAS 5-26850** **University of Washington** **5069**  
Fast and versatile 3-D plasma experiment to study magneto-  
spheric dynamics  
*Period* *Obligations*  
05/04/82-09/15/84 FY83: \$42,000 TOTAL: \$100,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Parks, G. K. GSFC/O'Brien, J. J. 13-Physics

**NAS 8-33148** **University of Washington** **5070**  
Atmospheric cloud physics laboratory gas scavenging experi-  
ment  
*Period* *Obligations*  
07/07/78-12/31/81 FY83: TOTAL: \$176,026  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hobbs, P. V. MSFC/Smith, R. E. 31-Atmos Sci  
MSFC/Keller, V. W.

**NAS 8-33884** **University of Washington** **5071**  
Research study: Theory of global lightning as seen from a  
satellite  
*Period* *Obligations*  
07/22/80-07/21/83 FY83: TOTAL: \$14,657  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ely, J. T. MSFC/Smith, R. E. 31-Atmos Sci  
MSFC/Jasper, G.

**NASW 3647** **University of Washington** **5072**  
Science working group on passive microwave data from satellites  
for sea ice research  
*Period* *Obligations*  
11/03/82-11/15/83 FY83: \$80,675 TOTAL: \$80,675  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Untersteiner, N. HQ-EE/Carver, K. L. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NCA 2-850301** **University of Washington** **5073**  
Application of analytical redundancy failure detection methods  
to a dual tetrad system  
*Period* *Obligations*  
10/15/82-10/14/83 FY83: \$15,480 TOTAL: \$15,480  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Alexandro, F. J. ARC/Xenakis, G. 45-Elec Engr

**NGR 48-002-141** **University of Washington** **5074**  
Research program in aeronautics and air transportation  
*Period* *Obligations*  
09/15/72-09/30/84 FY83: \$39,000 TOTAL: \$462,485  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Childs, M. E. ARC/Lee, G. 41-Aero Engr  
Gessner, F. B.

**NSG 2362** **University of Washington** **5075**  
Direct measurement of extinction by stratospheric aerosols  
*Period* *Obligations*  
01/01/79-12/31/83 FY83: \$49,680 TOTAL: \$272,904  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Charlson, R. J. ARC/Snetsinger, K. G. 31-Atmos Sci  
Clarke, A. D. ARC/Margozi, A. P.

**NASA'S UNIVERSITY PROGRAM  
WASHINGTON (Continued)**

<b>NSG 5374</b>	<b>University of Washington</b>		<b>5076</b>
	Kinematics and physical conditions in shocked clouds in supernova remnants		
	<i>Period</i>	<i>Obligations</i>	
	06/01/79-09/30/82	FY83: TOTAL: \$31,647	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Wallerstein, G.	GSFC/Boggess, A.	11-Astronomy
<b>NSG 5395</b>	<b>University of Washington</b>		<b>5077</b>
	Ultraviolet observations of selected cataclysmic variables		
	<i>Period</i>	<i>Obligations</i>	
	07/01/79-11/30/83	FY83: \$23,400 TOTAL: \$61,604	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Szkody, P.	GSFC/Kondo, Y.	11-Astronomy
<b>NSG 5398</b>	<b>University of Washington</b>		<b>5078</b>
	Observations of classical stellar chromospheres		
	<i>Period</i>	<i>Obligations</i>	
	07/15/79-01/31/84	FY83: \$46,200 TOTAL: \$104,100	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Bohm-vitense, E.	GSFC/Kondo, Y.	11-Astronomy
	Wallerstein, G.		
<b>NSG 7085</b>	<b>University of Washington</b>		<b>5079</b>
	Dynamics of planetary atmospheres		
	<i>Period</i>	<i>Obligations</i>	
	07/01/74-12/31/83	FY83: \$40,695 TOTAL: \$383,117	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Leovy, C. B.	HQ-EL/Brinton, H. C.	31-Atmos Sci
		HQ-EL/Brunk, W. E.	
<b>NSG 7173</b>	<b>University of Washington</b>		<b>5080</b>
	Application of spectral reflectance of lunar samples to telescopic spectra of unvisited parts of the Moon		
	<i>Period</i>	<i>Obligations</i>	
	07/01/75-01/31/84	FY83: \$66,637 TOTAL: \$389,968	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Adams, J. B.	HQ-EL/Williams, R. J.	32-Geological Sci
		HQ-EL/French, B. M.	
<b>NSG 7313</b>	<b>University of Washington</b>		<b>5081</b>
	Crystal-liquid distribution coefficients for selected elements		
	<i>Period</i>	<i>Obligations</i>	
	03/01/77-02/29/84	FY83: \$54,830 TOTAL: \$304,215	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	McCallum, I. S.	HQ-EL/Quaide, W. L.	32-Geological Sci
		HQ-EL/French, B. M.	
<b>NSG 7611</b>	<b>University of Washington</b>		<b>5082</b>
	Investigations of Martian meteorological processes using Viking meteorological data		
	<i>Period</i>	<i>Obligations</i>	
	03/01/79-09/30/82	FY83: TOTAL: \$168,974	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Leovy, C.	HQ-EL/Brinton, H. C.	31-Atmos Sci
<b>NSG 9032</b>	<b>University of Washington</b>		<b>5083</b>
	Reflectance spectroscopy of lunar samples		
	<i>Period</i>	<i>Obligations</i>	
	07/01/75-04/30/83	FY83: TOTAL: \$339,805	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Adams, J. D.	JSC/Dietrich, J. W.	32-Geological Sci
<b>NSG 9052</b>	<b>University of Washington</b>		<b>5084</b>
	A study of interplanetary dust		
	<i>Period</i>	<i>Obligations</i>	
	03/01/77-01/31/84	FY83: \$135,000 TOTAL: \$765,018	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Brownlee, D. E.	JSC/Dietrich, J. W.	31-Atmos Sci
<b>NAG 2-97</b>	<b>Washington State University</b>		<b>5085</b>
	Measurement of OH radicals in the lower atmosphere by the 14C tracer method		
	<i>Period</i>	<i>Obligations</i>	
	03/01/81-09/30/84	FY83: \$360,692 TOTAL: \$586,273	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Campbell, W. J.	ARC/Starr, W. L.	31-Atmos Sci
	Sheppard, J. C.		
	Stock, D. E.		
<b>NAGW 234</b>	<b>Washington State University</b>		<b>5086</b>
	Extinct nuclides in meteorites		
	<i>Period</i>	<i>Obligations</i>	
	08/15/81-02/27/84	FY83: TOTAL: \$11,620	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Srinivasan, B.	HQ-EL/Taylor, L. A.	32-Geological Sci
		HQ-EL/Quaide, W. L.	
<b>NCA 2-840002</b>	<b>Washington State University</b>		<b>5087</b>
	The physics and chemistry of supported metal clusters		
	<i>Period</i>	<i>Obligations</i>	
	06/01/80-10/01/82	FY83: TOTAL: \$44,605	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Dickinson, J. T.	ARC/Poppa, H. R.	13-Physics
<b>NCA 2-840102</b>	<b>Washington State University</b>		<b>5088</b>
	ESD effects and hydrogen mapping on structured metallic deposits		
	<i>Period</i>	<i>Obligations</i>	
	06/01/81-05/31/83	FY83: TOTAL: \$30,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Dickinson, J. T.	ARC/Poppa, H. R.	13-Physics
<b>NCA 2-840201</b>	<b>Washington State University</b>		<b>5089</b>
	Investigation of substrate effects in model catalytic systems		
	<i>Period</i>	<i>Obligations</i>	
	06/01/82-05/31/84	FY83: \$15,000 TOTAL: \$30,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Dickinson, J. T.	ARC/Poppa, H.	13-Physics
<b>NCA 2-840202</b>	<b>Washington State University</b>		<b>5090</b>
	Fracto-emission from graphite/epoxy composites		
	<i>Period</i>	<i>Obligations</i>	
	06/01/82-05/31/84	FY83: \$15,000 TOTAL: \$25,972	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Dickinson, J. T.	ARC/Nelson, H.	13-Physics

# **NASA'S UNIVERSITY PROGRAM** **WASHINGTON (Continued)**

**NCC 2-69** **Washington State University** **5091**  
The nucleation, growth, and in-situ oxidation of microscopic crystallites of transition metals on refractory oxide substrates

<i>Period</i>	<i>Obligations</i>	
04/15/80-08/31/82	FY83:	TOTAL: \$89,017
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dickinson, J. T.	ARC/Poppa, H. R.	13-Physics
Anton, R.		

**NSG 7214** **Washington State University** **5092**  
Atmospheric measurements of nitrous oxide and the halocarbons

<i>Period</i>	<i>Obligations</i>	
02/01/76-03/02/83	FY83:	TOTAL: \$381,263
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cronn, D.	HQ-EE/Chandra, S.	31-Atmos Sci
Robinson, E.	HQ-EE/Watson, R. T.	

**NCA 2-862101** **Western Washington University** **5093**  
Infrared and far-infrared interferometer studies of molecules of astronomical interest

<i>Period</i>	<i>Obligations</i>	
03/16/81-01/01/82	FY83:	TOTAL: \$10,141
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilson, H. M.	ARC/Boese, R. W.	12-Chemistry

**NCA 2-862201** **Western Washington University** **5094**  
Calculation of individual line and band strengths vibration/rotation transitions in acetylene

<i>Period</i>	<i>Obligations</i>	
06/14/82-04/30/83	FY83:	TOTAL: \$5,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilson, H. W.	ARC/Chackerian, C. C., Jr.	12-Chemistry

## **WEST VIRGINIA**

**NAS 5-27489** **Marshall University** **5095**  
West virginia LANDSAT program

<i>Period</i>	<i>Obligations</i>	
11/02/82-11/02/83	FY83: \$18,468	TOTAL: \$18,468
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brumfield, J. O.	GSFC/Blodget, H. W.	39-Env Sci, NEC
	GSFC/Witt, R. G.	

**NGT 49-001-800** **West Virginia University** **5096**  
Graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
05/15/81-08/16/83	FY83:	TOTAL: \$13,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Padhye, A.	HQ-LB/Carter, C. H.	46-Mech Engr

## **WISCONSIN**

**NAS 8-32901** **Beloit College** **5097**  
Scientific investigations in support of the space telescope project

<i>Period</i>	<i>Obligations</i>	
02/22/78-12/31/84	FY83: \$40,665	TOTAL: \$143,630
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schroeder, D. J.	MSFC/O'dell, C. R.	11-Astronomy

**NAG 2-212** **Marquette University** **5098**  
Alterations in skeletal muscle with disuse atrophy

<i>Period</i>	<i>Obligations</i>	
11/01/82-10/31/83	FY83: \$43,500	TOTAL: \$43,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fitts, R. H.	ARC/Ellis, S.	51-Biological Sci
Unsworth, B. R.		
Courtright, J. B.		

**NAS 9-15711** **Marquette University** **5099**  
Alterations in skeletal muscle with disuse atrophy

<i>Period</i>	<i>Obligations</i>	
09/21/78-12/31/81	FY83:	TOTAL: \$137,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fitts, R. H.	JSC/Smith, M. C., Jr.	59-Life Sci, NEC

**NAS 2-11305** **Medical College of Wisconsin** **5100**  
Electron microscopy, electromyography and protease activity of rat hind limb muscles

<i>Period</i>	<i>Obligations</i>	
08/02/82-03/31/84	FY83: \$153,011	TOTAL: \$210,764
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Riley, D. A.	ARC/Kennard, J.	51-Biological Sci

**NCA 2-432201** **Medical College of Wisconsin** **5101**  
Hypertrophic factors in muscle stretch and activity

<i>Period</i>	<i>Obligations</i>	
10/01/81-09/30/83	FY83: \$27,313	TOTAL: \$52,591
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Riley, D. A.	ARC/Ellis, S.	56-Medical Sciences

**NCC 2-266** **Medical College of Wisconsin** **5102**  
The role of stretch-induced growth factors in skeletal muscle atrophy

<i>Period</i>	<i>Obligations</i>	
08/01/83-07/31/84	FY83: \$85,250	TOTAL: \$85,250
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Riley, D. A.	ARC/Ellis, S.	56-Medical Sciences

**NAG 1-118** **University of Wisconsin - Madison** **5103**  
Development of an algorithm for removal of directional ambiguity from microwave scatter surface wind measurements

<i>Period</i>	<i>Obligations</i>	
11/13/80-12/31/82	FY83:	TOTAL: \$38,814
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hinton, B. B.	LARC/Schroeder, L. C.	33-Oceanography
Wyllie, D. P.		
Suomi, V. E.		

# **NASA'S UNIVERSITY PROGRAM** **WISCONSIN (Continued)**

**NAG 1-212 University of Wisconsin - Madison 5104**  
 Measurements systems and instrumentation development for energy related pollutants

Period	Obligations	
08/24/81-12/31/82	FY83:	TOTAL: \$67,898
Prin. Invest.	NASA Tech. Officer	CASE Category
Eloranta, E. W.	LARC/Browell, E. V.	31-Atmos Sci
Roesler, F. L.	LARC/Shiple, S. T.	

**NAG 2-93 University of Wisconsin - Madison 5105**  
 Morphology and movements of polarization features

Period	Obligations	
01/01/81-11/30/82	FY83:	TOTAL: \$26,914
Prin. Invest.	NASA Tech. Officer	CASE Category
Limaye, S. S.	ARC/Fimmel, R. O.	19-Phys Sci, NEC

**NAG 2-166 University of Wisconsin - Madison 5106**  
 Measurements of trabecular bones

Period	Obligations	
01/01/82-12/31/82	FY83:	TOTAL: \$27,974
Prin. Invest.	NASA Tech. Officer	CASE Category
Mazess, R. B.	ARC/Young, D. R.	56-Medical Sciences
Cameron, J. R.		

**NAG 2-167 University of Wisconsin - Madison 5107**  
 Identification of an unknown humoral agent responsible for bone mobilization

Period	Obligations	
03/01/82-02/28/84	FY83: \$61,000	TOTAL: \$131,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Deluca, H. F.	ARC/Young, D. R.	51-Biological Sci
Schnoes, H. K.		

**NAG 2-242 University of Wisconsin - Madison 5108**  
 Thermal and electrical contact conductance studies

Period	Obligations	
06/01/83-11/30/83	FY83: \$16,500	TOTAL: \$16,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Van Sciver, S. W.	ARC/Kittel, P.	45-Elec Engr
	ARC/Lum, H.	

**NAG 3-170 University of Wisconsin - Madison 5109**  
 Cryogenic energy storage for space applications

Period	Obligations	
03/30/81-09/30/82	FY83:	TOTAL: \$28,231
Prin. Invest.	NASA Tech. Officer	CASE Category
Boom, R. W.	LERC/Renz, D. D.	45-Elec Engr
Eyssa, U. M.		

**NAG 3-174 University of Wisconsin - Madison 5110**  
 An investigation of the atmospheric effects on coastal zone color scanner (CZCS) data

Period	Obligations	
04/10/81-08/19/82	FY83:	TOTAL: \$30,975
Prin. Invest.	NASA Tech. Officer	CASE Category
Scarpace, F. L.	LERC/Shook, D. F.	31-Atmos Sci
Weiler, P. R., Jr.		

**NAG 3-274 University of Wisconsin - Madison 5111**  
 Effects of alternate fuels properties on combustion and emission mechanisms in direct injected engines

Period	Obligations	
07/01/82-01/31/84	FY83: \$65,000	TOTAL: \$140,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Borman, G. L.	LERC/Simon, F. F.	46-Mech Engr
Foster, D. E.		
Myers, P. S.		

**NAG 3-359 University of Wisconsin - Madison 5112**  
 Superconductive energy storage for space applications

Period	Obligations	
11/20/82-12/31/83	FY83: \$35,000	TOTAL: \$35,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Boom, R. W.	LERC/Renz, D. D.	45-Elec Engr
	LERC/Myers, I. T.	

**NAG 3-436 University of Wisconsin - Madison 5113**  
 Containerless-processing of under cooled melts

Period	Obligations	
09/01/83-08/31/84	FY83: \$60,000	TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Perepezko, J. H.	LERC/Gray, H. R.	47-Materials Engr

**NAG 5-23 University of Wisconsin - Madison 5114**  
 Analysis of three-dimensional thunderstorm model output in terms of geosynchronous satellite observations

Period	Obligations	
03/01/80-07/31/84	FY83: \$50,147	TOTAL: \$123,739
Prin. Invest.	NASA Tech. Officer	CASE Category
Schlesinger, R. E.	GSFC/Adler, R. F.	31-Atmos Sci

**NAG 5-81 University of Wisconsin - Madison 5115**  
 Resolution studies and energy diagnostics of global data and climate model simulations

Period	Obligations	
06/15/80-07/31/84	FY83: \$124,963	TOTAL: \$163,463
Prin. Invest.	NASA Tech. Officer	CASE Category
Johnson, D. R.	GSFC/Atlas, R. M.	31-Atmos Sci

**NAG 5-128 University of Wisconsin - Madison 5116**  
 New mathematical methods for vocational objective analysis of meteorological information

Period	Obligations	
12/01/80-03/31/83	FY83:	TOTAL: \$167,889
Prin. Invest.	NASA Tech. Officer	CASE Category
Wahba, G.	GSFC/Kalnay, E.	31-Atmos Sci
Johnson, D. R.		

**NAG 5-186 University of Wisconsin - Madison 5117**  
 Ultraviolet studies with satellite data

Period	Obligations	
06/15/81-11/30/83	FY83: \$56,947	TOTAL: \$149,443
Prin. Invest.	NASA Tech. Officer	CASE Category
Savage, B. D.	GSFC/Kondo, Y.	11-Astronomy
Fitzpatrick, E. L.		
Massa, D. L.		



**NASA'S UNIVERSITY PROGRAM**  
**WISCONSIN (Continued)**

<b>NAG 5-274 University of Wisconsin - Madison 5118</b>			
Technique development to improve satellite soundings over radiatively complex terrain conditions			
<i>Period</i>	<i>Obligations</i>		
09/01/82-11/30/83	FY83:	TOTAL: \$37,488	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Suomi, V. E.	GSFC/Susskind, J.	31-Atmos Sci	
Smith, W. L.			
<b>NAG 5-301 University of Wisconsin - Madison 5119</b>			
Comparison of satellite wind observations in the tropics with general circulation model simulations			
<i>Period</i>	<i>Obligations</i>		
04/01/83-03/31/84	FY83: \$63,249	TOTAL: \$63,249	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Suomi, V. E.	GSFC/Atlas, R. M.	31-Atmos Sci	
<b>NAG 5-316 University of Wisconsin - Madison 5120</b>			
New mathematical methods for variational objective analysis of meteorological information			
<i>Period</i>	<i>Obligations</i>		
05/01/83-04/30/84	FY83: \$97,431	TOTAL: \$97,431	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wahba, G.	GSFC/Kalnay, E.	31-Atmos Sci	
Johnson, D. R.			
<b>NAG 5-353 University of Wisconsin - Madison 5121</b>			
The geometric structure of eclipsing symbiotic binaries			
<i>Period</i>	<i>Obligations</i>		
08/01/83-07/31/84	FY83: \$1,200	TOTAL: \$1,200	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Anderson, C. M.	GSFC/Kondo, Y.	11-Astronomy	
Oliversen, N. A.			
Stencel, R. E.			
<b>NAG 8-401 University of Wisconsin - Madison 5122</b>			
X-ray absorption by dark nebulae			
<i>Period</i>	<i>Obligations</i>		
06/15/81-06/17/84	FY83:	TOTAL: \$9,305	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Sanders, W. T.	MSFC/Stone, J. F.	11-Astronomy	
<b>NAG 8-410 University of Wisconsin - Madison 5123</b>			
Completion of the survey of Wolf Rayet stars which have optical OVI emission, X-ray emission from symbiotic stars: Ag Dra, observations and analysis of X-ray emission from AE/BE stars			
<i>Period</i>	<i>Obligations</i>		
07/28/81-04/30/83	FY83:	TOTAL: \$25,723	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Cassinelli, J. P.	MSFC/Stone, J. F.	11-Astronomy	
Vanderhucht, K. A.			
<b>NAG 8-431 University of Wisconsin - Madison 5124</b>			
Limits on coronal material in normal galaxies			
<i>Period</i>	<i>Obligations</i>		
05/01/82-04/30/84	FY83:	TOTAL: \$6,099	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
McCammon, D.	MSFC/Stone, J. F.	11-Astronomy	
<b>NAGW 275 University of Wisconsin - Madison 5125</b>			
Charged particle acceleration mechanisms in sparse plasmas double layers			
<i>Period</i>	<i>Obligations</i>		
01/15/82-12/14/83	FY83: \$35,000	TOTAL: \$71,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Hershkovitz, N.	HQ-EE/Lynch, J. T.	19-Phys Sci, NEC	
	HQ-EE/Wiskerchen, M. J.		
<b>NAGW 283 University of Wisconsin - Madison 5126</b>			
Studies of the supermassive central star of the 30 poradus nebula and related objects			
<i>Period</i>	<i>Obligations</i>		
02/01/82-02/28/84	FY83: \$25,900	TOTAL: \$51,514	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Cassinelli, J. P.	HQ-EZ/Stencel, R. E.	11-Astronomy	
Mathis, J. S.	HQ-EZ/Weiler, E. J.		
Savage, B. D.			
<b>NAGW 314 University of Wisconsin - Madison 5127</b>			
Studies of Jupiter's atmospheric circulation and and cloud structure			
<i>Period</i>	<i>Obligations</i>		
04/15/82-04/14/84	FY83: \$85,000	TOTAL: \$170,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Suomi, V. E.	HQ-EL/Brinton, H. C.	31-Atmos Sci	
	HQ-EL/Evans, N.		
<b>NAGW 380 University of Wisconsin - Madison 5128</b>			
Research in support of NASA's space science and application programs			
<i>Period</i>	<i>Obligations</i>		
11/01/82-10/31/83	FY83: \$79,416	TOTAL: \$79,416	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Weinman, J. A.	HQ-E/Rosendhal, J. D.	11-Astronomy	
<b>NAGW 401 University of Wisconsin - Madison 5129</b>			
A statistical analysis of stratospheric ozone profile			
<i>Period</i>	<i>Obligations</i>		
11/01/82-10/31/83	FY83: \$28,000	TOTAL: \$28,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Reinsel, G. C.	HQ-EE/Chandra, S.	31-Atmos Sci	
	HQ-EE/Watson, R. T.		
<b>NAGW 422 University of Wisconsin - Madison 5130</b>			
Studies of ultraviolet intrinsic polarization of stars			
<i>Period</i>	<i>Obligations</i>		
04/01/83-03/31/84	FY83: \$30,093	TOTAL: \$30,093	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Cassinelli, J. P.	HQ-EZ/Stencel, R. E.	11-Astronomy	
	HQ-EZ/Weiler, E. J.		
<b>NAGW 435 University of Wisconsin - Madison 5131</b>			
Thin film technology for ultraviolet optical coatings			
<i>Period</i>	<i>Obligations</i>		
05/01/83-04/30/84	FY83: \$28,920	TOTAL: \$28,920	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Cab, A. D.	HQ-EZ/Weiler, E. J.	11-Astronomy	
	HQ-EZ/Bogges, N. W.		

# **NASA'S UNIVERSITY PROGRAM** **WISCONSIN (Continued)**

**NAS 1-16507 University of Wisconsin - Madison 5132**  
Science support for the Earth radiation budget experiment (ERBE)

Period	Obligations	
10/17/80-10/16/85	FY83: \$39,000	TOTAL: \$64,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, W. L.	LARC/Hall, J. B., Jr.	31-Atmos Sci
Suomi, V. W.	LARC/Barkstrom, B. R.	
Sromovsky, L. A.		

**NAS 2-11615 University of Wisconsin - Madison 5133**  
Co-investigator support for the Galileo net flux radiometer experiment

Period	Obligations	
05/01/83-04/30/84	FY83: \$24,904	TOTAL: \$24,904
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sromovsky, L. A.	ARC/Boese, R. W.	11-Astronomy

**NAS 5-21965 University of Wisconsin - Madison 5134**  
Development of an IR temperature sounder for SMS spacecraft

Period	Obligations	
08/01/73-02/08/84	FY83: \$408,048	TOTAL: \$4,051,373
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Suomi, V. E.	GSFC/Greaves, J. R.	31-Atmos Sci
Menzel, P.	GSFC/Gary, J. P.	

**NAS 5-22410 University of Wisconsin - Madison 5135**  
Reduction and analysis of data from OSO-1 soft X-ray background experiment

Period	Obligations	
06/26/75-09/30/81	FY83:	TOTAL: \$682,537
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kraushaar, W. L.	GSFC/Gemmell, J.	31-Atmos Sci

**NAS 5-24487 University of Wisconsin - Madison 5136**  
High speed photometer for the space telescope printer

Period	Obligations	
03/08/78-01/31/85	FY83: \$1,084,800	TOTAL: \$5,635,519
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bliss, R.	GSFC/Sours, W.	11-Astronomy

**NAS 5-25487 University of Wisconsin - Madison 5137**  
Support to the space telescope wide field planetary camera development team

Period	Obligations	
02/01/79-12/31/83	FY83: \$40,081	TOTAL: \$145,795
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Code, A. D.	GSFC/Fellerman, K.	11-Astronomy

**NAS 5-25714 University of Wisconsin - Madison 5138**  
Support of high resolution spectrograph (HRS)

Period	Obligations	
05/16/79-04/30/84	FY83: \$45,000	TOTAL: \$182,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Savage, B. C.	GSFC/Vitagliano, H. D.	11-Astronomy

**NAS 5-25977 University of Wisconsin - Madison 5139**  
Investigation of Antarctic crust and upper mantle using MAGSAT and other geophysical data

Period	Obligations	
01/18/80-09/01/83	FY83:	TOTAL: \$83,875
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bentley, C. R.	GSFC/Oseroff, H.	32-Geological Sci

**NAS 5-26055 University of Wisconsin - Madison 5140**  
Generate an investigation development plan and establish the preliminary interface for the Wisconsin ultraviolet photoelectric polarimeter experiment

Period	Obligations	
02/29/80-12/31/81	FY83:	TOTAL: \$254,061
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Code, A. D.	GSFC/Young, E.	11-Astronomy

**NAS 5-26078 University of Wisconsin - Madison 5141**  
Generate an investigation development plan and establish preliminary interface for the diffuse soft X-ray Bragg spectrometer

Period	Obligations	
03/10/80-03/31/84	FY83:	TOTAL: \$363,320
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kraushaar, W. L.	GSFC/Sing, M. L.	11-Astronomy

**NAS 5-26345 University of Wisconsin - Madison 5142**  
Study climate observing system requirements and capability assessments

Period	Obligations	
09/25/80-06/24/83	FY83:	TOTAL: \$39,946
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Suomi, V. E.	GSFC/Thiele, O. W.	39-Env Sci, NEC

**NAS 5-26423 University of Wisconsin - Madison 5143**  
Wisconsin remote sensing applications project

Period	Obligations	
01/01/81-07/31/82	FY83:	TOTAL: \$34,791
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Scarpace, F. L.	GSFC/Middleton, E. M.	39-Env Sci, NEC

**NAS 5-26540 University of Wisconsin - Madison 5144**  
First GARP global experiment special effort program

Period	Obligations	
04/07/81-05/06/82	FY83: \$4,849	TOTAL: \$90,718
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Suomi, V. E.	GSFC/Greaves, J. R.	31-Atmos Sci
	GSFC/Atlas, R. M.	

**NAS 5-26777 University of Wisconsin - Madison 5145**  
Development phase of the Wisconsin ultraviolet photo polarimeter experiment (WUPPE)

Period	Obligations	
09/04/81-03/31/87	FY83: \$319,000	TOTAL: \$997,760
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Code, A. D.	MSFC/Owens, J.	11-Astronomy
Nordsieck, K.		

**NASA'S UNIVERSITY PROGRAM  
WISCONSIN (Continued)**

**NAS 5-27320 University of Wisconsin - Madison 5146**  
MLA bidirectional reflectance and atmospheric effects experiment

Period	Obligations	
07/26/82-02/28/83	FY83: \$6,076	TOTAL: \$27,437
Prin. Invest.	NASA Tech. Officer	CASE Category
Eloranta, E. W.	GSFC/Brakke, T.	31-Atmos Sci

**NAS 5-27608 University of Wisconsin - Madison 5147**  
Development of high-resolution interferometer sounder (HIS) phase II

Period	Obligations	
05/13/83-07/12/84	FY83: \$455,000	TOTAL: \$455,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, W. L.	GSFC/Hurley, E. J.	31-Atmos Sci

**NAS 8-33222 University of Wisconsin - Madison 5148**  
Diagnostics of severe convection and sub-synoptic scale ageostrophic circulations

Period	Obligations	
06/01/79-03/14/84	FY83:	TOTAL: \$247,359
Prin. Invest.	NASA Tech. Officer	CASE Category
Johnson, D. R.	MSFC/Turner, R. E.	31-Atmos Sci

**NAS 8-33799 University of Wisconsin - Madison 5149**  
Application of the AVE-SESAME data set to mesoscale studies

Period	Obligations	
05/13/80-11/30/84	FY83: \$355,308	TOTAL: \$584,912
Prin. Invest.	NASA Tech. Officer	CASE Category
Suchman, D.	MSFC/Wilson, G. S.	31-Atmos Sci
Wash, C. H.	MSFC/Turner, R. E.	

**NAS 8-34732 University of Wisconsin - Madison 5150**  
Cooperative visible infrared spin scan radiometer atmospheric sounder

Period	Obligations	
07/29/82-07/29/84	FY83: \$89,049	TOTAL: \$111,686
Prin. Invest.	NASA Tech. Officer	CASE Category
Suomi, V. E.	MSFC/Wilson, G. S.	31-Atmos Sci
Menzel, P.	MSFC/Smith, G. T.	
Houghton, D.		

**NAS 9-15580 University of Wisconsin - Madison 5151**  
Vitamin D metabolites and bone demineralization

Period	Obligations	
04/01/78-02/01/84	FY83: \$46,000	TOTAL: \$306,342
Prin. Invest.	NASA Tech. Officer	CASE Category
Schooes, H. K.	JSC/Cintrone-trevino, N.	56-Medical Sciences

**NASW 3476 University of Wisconsin - Madison 5152**  
Development of a centralized storm information system (CSIS) at the national weather service storms center

Period	Obligations	
04/19/81-09/30/83	FY83: \$302,832	TOTAL: \$2,147,871
Prin. Invest.	NASA Tech. Officer	CASE Category
Suoni, V. E.	HQ-EB/Dodge, J. C.	31-Atmos Sci
	HQ-EB/Tilford, S. G.	

**NCC 2-136 University of Wisconsin - Madison 5153**  
Controlled environment injuries to plants

Period	Obligations	
05/01/81-01/31/84	FY83: \$66,000	TOTAL: \$184,578
Prin. Invest.	NASA Tech. Officer	CASE Category
Tibbitts, T. W.	ARC/Zill, L. P.	51-Biological Sci

**NCC 2-217 University of Wisconsin - Madison 5154**  
Spinal bone mineral

Period	Obligations	
10/01/82-09/30/83	FY83: \$7,085	TOTAL: \$7,085
Prin. Invest.	NASA Tech. Officer	CASE Category
Mazess, R. B.	ARC/Young, D. R.	56-Medical Sciences

**NGL 50-002-013 University of Wisconsin - Madison 5155**  
Investigations and studies of ultraviolet stellar spectra and associated instrumentation

Period	Obligations	
05/20/64-09/30/83	FY83: \$25,062	TOTAL: \$2,886,552
Prin. Invest.	NASA Tech. Officer	CASE Category
Code, A. D.	GSFC/Early, L. J.	11-Astronomy
	GSFC/Pless, R. H.	

**NGL 50-002-044 University of Wisconsin - Madison 5156**  
Research in cosmic and solar physics

Period	Obligations	
10/25/65-12/31/84	FY83: \$150,000	TOTAL: \$3,042,626
Prin. Invest.	NASA Tech. Officer	CASE Category
Kraushaar, W. L.	GSFC/Early, L. J.	11-Astronomy
Sanders, W. T.	GSFC/Pless, R. H.	
McCammon, D.		

**NGR 50-002-051 University of Wisconsin - Madison 5157**  
Applications of the direct photon absorption techniques for measuring bone-mineral content

Period	Obligations	
10/01/81-01/31/82	FY83:	TOTAL: \$697,294
Prin. Invest.	NASA Tech. Officer	CASE Category
Mazess, R. B.	ARC/Young, D. R.	56-Medical Sciences
Cameron, J. R.		

**NGR 50-002-162 University of Wisconsin - Madison 5158**  
Solar wind physics

Period	Obligations	
01/26/71-06/30/84	FY83: \$9,998	TOTAL: \$436,928
Prin. Invest.	NASA Tech. Officer	CASE Category
Scherb, F.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EE/Wiskerchen, M. J.	

**NGR 50-002-189 University of Wisconsin - Madison 5159**  
Cloud image processing for planetary flybys

Period	Obligations	
01/19/72-02/28/84	FY83: \$75,000	TOTAL: \$502,083
Prin. Invest.	NASA Tech. Officer	CASE Category
Suomi, V. E.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

# **NASA'S UNIVERSITY PROGRAM** **WISCONSIN (Continued)**

## **NGT 50-002-800 University of Wisconsin - Madison 5160** Graduate student researchers program

Period	Obligations	
09/01/82-08/31/84	FY83: \$15,000	TOTAL: \$28,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Kiefer, R. W.	HQ-LB/Owens, F. C.	49-Engr, NEC

## **NGT 50-002-801 University of Wisconsin - Madison 5161** NASA graduate student researchers program

Period	Obligations	
07/01/83-06/30/84	FY83: \$15,000	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Giese, R. L.	HQ-LB/Owens, F. C.	39-Env Sci, NEC

## **NSG 5152 University of Wisconsin - Madison 5162** Research of clouds and ice in the planetary scale circulation and in climate

Period	Obligations	
01/01/77-12/31/83	FY83:	TOTAL: \$262,874
Prin. Invest.	NASA Tech. Officer	CASE Category
Kutzbach, J. E.	GSFC/Halem, M.	31-Atmos Sci
Suomi, V. E.		

## **NSG 5223 University of Wisconsin - Madison 5163** Research of the effect of synoptic scale processes in global circulation models modelling

Period	Obligations	
01/16/78-07/31/84	FY83: \$85,000	TOTAL: \$371,619
Prin. Invest.	NASA Tech. Officer	CASE Category
Herman, G. F.	GSFC/Halem, M.	31-Atmos Sci

## **NSG 5252 University of Wisconsin - Madison 5164** Optimum employment of satellite

Period	Obligations	
03/15/78-12/31/81	FY83:	TOTAL: \$123,995
Prin. Invest.	NASA Tech. Officer	CASE Category
Horn, L. H.	GSFC/Halem, M.	31-Atmos Sci

## **NAG 2-160 University of Wisconsin - Milwaukee 5165** Turbulent transport modelling of shear flows around and aerodynamic wing

Period	Obligations	
06/01/82-07/31/83	FY83:	TOTAL: \$7,772
Prin. Invest.	NASA Tech. Officer	CASE Category
Amano, R. S.	ARC/Viegas, J. R.	41-Aero Engr

## **NAG 5-209 University of Wisconsin - Milwaukee 5166** Hydro and biodynamics of the developing thermal front in Lake Michigan

Period	Obligations	
09/15/81-05/31/84	FY83:	TOTAL: \$18,607
Prin. Invest.	NASA Tech. Officer	CASE Category
Mortimer, C. H.	GSFC/Rao, D. B.	33-Oceanography

## **WYOMING**

## **NAG 1-272 University of Wyoming 5167** Analysis of the stress state in an Iosipescu shear test specimen

Period	Obligations	
05/01/82-04/30/84	FY83: \$49,215	TOTAL: \$79,156
Prin. Invest.	NASA Tech. Officer	CASE Category
Adams, D. F.	LARC/Dow, M. B.	41-Aero Engr
Coulter, B. A.		

## **NAG 1-277 University of Wyoming 5168** Investigation of the relations between neat resin and advanced composite mechanical properties

Period	Obligations	
05/03/82-05/02/84	FY83: \$39,643	TOTAL: \$69,571
Prin. Invest.	NASA Tech. Officer	CASE Category
Zimmerman, R. S.	LARC/Johnston, N. J.	47-Materials Engr
Odom, E. M.	LARC/Stein, B. A.	

## **NAG 1-351 University of Wyoming 5169** Determining delamination resistance in fatigue utilizing the edge delamination test

Period	Obligations	
04/01/83-03/31/84	FY83: \$93,044	TOTAL: \$93,044
Prin. Invest.	NASA Tech. Officer	CASE Category
Odom, E. M.	LARC/O'Brien, T. K.	41-Aero Engr
Adams, D. F.	LARC/Johnston, N. J.	

## **NAG 2-65 University of Wyoming 5170** Balloon-borne measurements of stratospheric condensation nuclei

Period	Obligations	
07/01/80-03/31/84	FY83: \$30,000	TOTAL: \$186,291
Prin. Invest.	NASA Tech. Officer	CASE Category
Rosen, J. M.	ARC/Toon, O. B.	31-Atmos Sci
Hofmann, D. J.	ARC/Summers, A. L.	

## **NAG 2-134 University of Wyoming 5171** The study of star formation and molecular cloud evolution using the Kuiper Airborne Observatory

Period	Obligations	
10/01/81-03/31/84	FY83: \$15,664	TOTAL: \$79,196
Prin. Invest.	NASA Tech. Officer	CASE Category
Thronson, H. A., Jr.	ARC/Haughney, L. C.	11-Astronomy

## **NAG 2-252 University of Wyoming 5172** A far-infrared study of galactic evolution using the Kuiper Airborne Observatory

Period	Obligations	
10/01/83-04/30/84	FY83: \$16,000	TOTAL: \$16,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, J.	ARC/Haughney, L. C.	11-Astronomy

# **NASA'S UNIVERSITY PROGRAM** **WYOMING (Continued)**

**NAGW 430** **University of Wyoming** **5173**  
Balloon-borne measurements of stratospheric condensation nuclei

Period	Obligations	
01/01/83-12/31/83	FY83: \$60,000	TOTAL: \$60,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hofmann, D. J.	HQ-EE/Schiffer, R. A.	31-Atmos Sci
Rosen, J. M.	HQ-EE/Thompson, D. E.	

**NAS 1-14373** **University of Wyoming** **5174**  
Science support for the Nimbus G stratospheric aerosol measurement experiment

Period	Obligations	
04/02/76-12/21/81	FY83: \$2,637	TOTAL: \$213,768
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pepin, T. J.	LARC/McCormick, M. P.	31-Atmos Sci
	LARC/McMaster, L. R.	

**NAS 1-14931** **University of Wyoming** **5175**  
Stratospheric aerosol and gas experiment

Period	Obligations	
07/19/77-09/30/83	FY83:	TOTAL: \$191,929
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pepin, T. J.	LARC/McMaster, L. R.	31-Atmos Sci
	LARC/McCormick, M. P.	

**NAS 1-16305** **University of Wyoming** **5176**  
Science support for Earth radiation budget satellite/stratospheric aerosol and gas experiment

Period	Obligations	
06/27/80-06/26/85	FY83: \$40,000	TOTAL: \$167,540
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pepin, T. J.	LARC/McMaster, L. R.	31-Atmos Sci
	LARC/McCormick, M. P.	

**NAS 1-16557** **University of Wyoming** **5177**  
Determination of stiffness reductions during fatigue of unnotched, angle-ply graphite/epoxy laminates

Period	Obligations	
01/12/81-08/02/82	FY83:	TOTAL: \$23,650
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Adams, D. F.	LARC/O'Brien, T. K.	47-Materials Engr
Walrath, D. E.	LARC/Roderick, G. L.	

**NAS 1-17289** **University of Wyoming** **5178**  
Balloon-borne aerosol measurements

Period	Obligations	
03/09/83-07/08/83	FY83: \$31,973	TOTAL: \$31,973
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hofmann, D. J.	LARC/McCormick, M. P.	31-Atmos Sci

**NAS 2-11612** **University of Wyoming** **5179**  
Polymer matrix and graphite fiber study

Period	Obligations	
04/04/83-05/03/84	FY83: \$119,390	TOTAL: \$119,390
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Adams, D. F.	ARC/Gilwee, W. J.	12-Chemistry
Odom, E. M.		

**NAS 5-27783** **University of Wyoming** **5180**  
Support services for the California coastal cloud experiment

Period	Obligations	
09/01/83-09/02/84	FY83: \$20,954	TOTAL: \$20,954
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cooper, W. A.	GSFC/Simpson, J.	31-Atmos Sci

**NAS 8-33150** **University of Wyoming** **5181**  
Atmospheric cloud physics laboratory ice forming experiment preliminary definition

Period	Obligations	
08/07/78-11/30/81	FY83:	TOTAL: \$143,338
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Vali, G.	MSFC/Smith, R. E.	31-Atmos Sci
	MSFC/Keller, V. W.	

**NCA 2-880201** **University of Wyoming** **5182**  
An experimental model for biological hydrophobic interactions

Period	Obligations	
09/01/82-08/31/84	FY83:	TOTAL: \$13,484
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Middaugh, C.	ARC/MacElroy, D.	51-Biological Sci

**NSG 3217** **University of Wyoming** **5183**  
Energy absorption mechanisms during crack propagation in metal matrix composites

Period	Obligations	
08/01/78-10/29/82	FY83:	TOTAL: \$143,810
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Adams, D. F.	LERC/Dicarlo, J. A.	47-Materials Engr
	LERC/Grimes, H. H.	

## **PUERTO RICO**

**NAGW 198** **University of Puerto Rico - Mayaguez** **5184**  
Study of seawater corrosion rate of zinc diffusion protected aluminum surface

Period	Obligations	
05/01/81-04/15/82	FY83:	TOTAL: \$377,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sasscer, D. S.	HQ-LG/Goldberg, S. R.	
	HQ-RE/Del Gobbo, J.	47-Materials Engr

## **AUSTRALIA**

**NAGW 267** **University of New South Wales** **5185**  
High voltage, high efficiency silicon minp solar cells

Period	Obligations	
12/01/81-06/30/83	FY83:	TOTAL: \$56,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Green, M. A.	LERC/Weizer, V. G.	45-Elec Engr

# **NASA'S UNIVERSITY PROGRAM** **AUSTRALIA (Continued)**

**NAGW 385**                      **University of Sydney**                      **5186**  
A numerical study of aerothermodynamics phenomena for low density flows

Period	Obligations	
08/23/82-08/12/83	FY83: \$10,000	TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bird, G. A.	LARC/Jones, J. J.	22-Computer Science

## **GREAT BRITAIN**

**NASW 3631**                      **Imperial College of Science & Technology**                      **5192**  
3d s-diffuser benchmark experiments

Period	Obligations	
07/16/82-10/01/83	FY83:	TOTAL: \$99,906
Prin. Invest.	NASA Tech. Officer	CASE Category
Whitelaw, R.	LERC/Hingst, W.	39-Env Sci, NEC

## **CANADA**

**NCA 2-103101**                      **Carleton University**                      **5187**  
An investigation of the effects of selected communications media on the performance of separated work teams

Period	Obligations	
09/01/81-08/31/84	FY83:	TOTAL: \$9,259
Prin. Invest.	NASA Tech. Officer	CASE Category
George, D. A.	ARC/Connors, M. M.	29-Math/Cmputer, NEC

**NCCW 3**                      **University of Manchester**                      **5193**  
Further analyses of wind tunnel test, data on ogive cylinder bodies at high angles of attack

Period	Obligations	
06/15/82-06/14/83	FY83:	TOTAL: \$10,835
Prin. Invest.	NASA Tech. Officer	CASE Category
Lamont, P. J.	ARC/Malcolm, G. N.	41-Aero Engr

**NAGW 429**                      **University of Toronto**                      **5188**  
Development of fuzzy set calculus for estimating pilot workload as a function of modes of operator behavior

Period	Obligations	
12/15/82-12/14/83	FY83: \$42,050	TOTAL: \$42,050
Prin. Invest.	NASA Tech. Officer	CASE Category
Moray, N.	ARC/Hart, S. G.	69-Psych, NEC

**NAGW 478**                      **University of Wales**                      **5194**  
Finite element methods of analysis for high speed viscous compressible flow

Period	Obligations	
10/01/83-09/30/84	FY83: \$28,770	TOTAL: \$28,770
Prin. Invest.	NASA Tech. Officer	CASE Category
Morgan, K.	LARC/Bey, K. S.	29-Math/Cmputer, NEC
Zienkiewicz, O. C.	LARC/Olsen, G. C.	

**NSG 7409**                      **University of Toronto**                      **5189**  
Application of the cubic strength criterion to the failure analysis of composite structures

Period	Obligations	
03/01/78-08/31/83	FY83:	TOTAL: \$72,320
Prin. Invest.	NASA Tech. Officer	CASE Category
Schweikhard, W. G.	LARC/Baker, D. J.	47-Materials Engr
Yechout, T. R.	LARC/Poe, C. C.	

**NCCW 2**                      **University of Wales**                      **5195**  
Computer program for buckling of stiffened composite panels with shear loading

Period	Obligations	
10/01/81-09/30/83	FY83: \$20,200	TOTAL: \$43,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Williams, F. W.	LARC/Stroud, W. J.	41-Aero Engr
	LARC/Anderson, M. S.	

**NSG 7647**                      **University of Toronto**                      **5190**  
Electron beam charging and arc discharging of spacecraft insulating materials

Period	Obligations	
10/01/79-04/31/83	FY83:	TOTAL: \$225,522
Prin. Invest.	NASA Tech. Officer	CASE Category
Balmain, K. G.	LERC/Staskus, J. V.	45-Elec Engr
	LERC/Stevens, N. J.	

**NSG 7172**                      **University of Southampton**                      **5196**  
Self-streamlining of the test section of a transonic wind tunnel

Period	Obligations	
10/01/75-12/30/83	FY83: \$32,000	TOTAL: \$350,026
Prin. Invest.	NASA Tech. Officer	CASE Category
Goodyer, M. J.	LARC/Ladson, C. L.	41-Aero Engr
	LARC/Plentovich, E. B.	

## **CHILE**

**NAS 5-1925**                      **University of Chile**                      **5191**  
Maintenance and operation of minitrack facilities

Period	Obligations	
09/21/62-10/31/81	FY83: \$5,710,000	TOTAL: \$60,546,506
Prin. Invest.	NASA Tech. Officer	CASE Category
Diaz, E.	GSFC/Force, C. A.	99-Multi-Discip
	GSFC/Spintman, D.	

**NSG 7523**                      **University of Southampton**                      **5197**  
Investigations into the technology required to raise reliability levels of magnetic suspension system

Period	Obligations	
01/01/79-10/30/83	FY83: \$59,820	TOTAL: \$268,960
Prin. Invest.	NASA Tech. Officer	CASE Category
Goodyer, M. J.	LARC/Boyden, R. P.	41-Aero Engr
	LARC/Kilgore, R. A.	

**NASA'S UNIVERSITY PROGRAM**  
**GREAT BRITAIN (Continued)**

**ISRAEL**

**NAGW 218**                      **Israel Institute of Technology**                      **5198**  
 Calculation of high angle of attack stability deviates for wings in  
 unsteady motion as in unsteady motion

<i>Period</i>	<i>Obligations</i>	
05/01/81-04/30/83	FY83:	TOTAL: \$38,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Katz, J.	ARC/Schiff, L. B.	41-Aero Engr
	ARC/Maloolm, G. N.	

**NAGW 327**                      **Israel Institute of Technology**                      **5199**  
 A study of bubbly lubricating films

<i>Period</i>	<i>Obligations</i>	
06/01/82-09/30/83	FY83: \$10,320	TOTAL: \$40,320
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Etsion, I.	LERC/Hendricks, R. C.	46-Mech Engr
Haber, S.		

**PERU**

**NASW 7**                      **University of Peru**                      **5200**  
 Operation of tracking station

<i>Period</i>	<i>Obligations</i>	
12/01/68-05/31/83	FY83: \$55,950	TOTAL: \$3,356,462
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Unavailable	GSFC/Christie, C. J.	49-Engr, NEC





# NASA'S UNIVERSITY PROGRAM

## APPENDIX

### CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

The Fields used here are specified by Amendment J, "Standard Classification of Fields of Science and Engineering," to Office of Management and Budget (OMB) Circular A-46, "Standards for Statistical Surveys." Field codes are interpreted as follows:

#### PHYSICAL SCIENCES

- 11 ASTRONOMY
- 12 CHEMISTRY
- 13 PHYSICS
- 19 PHYSICAL SCIENCES, NEC\*

#### ENVIRONMENTAL SCIENCES (Terrestrial and extraterrestrial)

- 31 ATMOSPHERIC SCIENCES
- 32 GEOLOGICAL SCIENCES
- 33 OCEANOGRAPHY
- 39 ENVIRONMENTAL SCIENCES, NEC\*

#### LIFE SCIENCES

- 51 BIOLOGICAL SCIENCES
- 54 ENVIRONMENTAL BIOLOGY
- 55 AGRICULTURAL SCIENCES
- 56 MEDICAL SCIENCES
- 59 LIFE SCIENCES, NEC\*

#### SOCIAL SCIENCES

- 71 ANTHROPOLOGY
- 72 ECONOMICS
- 73 HISTORY
- 74 LINGUISTICS
- 75 POLITICAL SCIENCE
- 76 SOCIOLOGY
- 79 SOCIAL SCIENCE, NEC\*

#### MATHEMATICAL/ COMP SCI

- 21 MATHEMATICS
- 22 COMPUTER SCIENCES
- 29 MATHEMATICAL COMPUTER SCIENCES, NEC\*

#### ENGINEERING

- 41 AERONAUTICAL
- 42 ASTRONAUTICAL
- 43 CHEMICAL
- 44 CIVIL
- 45 ELECTRICAL
- 46 MECHANICAL
- 47 METALLURGY AND MATERIALS
- 49 ENGINEERING, NEC\*

#### PSYCHOLOGY

- 61 BIOLOGICAL
- 62 SOCIAL ASPECTS
- 69 PSYCHOLOGY, NEC\*

#### OTHER SCIENCES\*\*

- 99 ALL DISCIPLINE(S)

\*Not Elsewhere Classified (For interdisciplinary projects and others not listed by discipline name)

\*\*For interdisciplinary projects which cannot be classified within any of the preceding main fields

Abbreviations used in the "Technical Officer Locations" column are discussed in the prefatory pages.

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
11	ARIZONA STATE UNIV	Kondo, Y.	GSFC	Cowley, A.	NAG 5-358	1092
11	BAYLOR UNIVERSITY	Brunk, W. E.	HQ-EL	Alexander, W. M.	NASW 3577	4475
11	BELOIT COLLEGE	O'dell, C. R.	MSFC	Schroeder, D. J.	NAS 8-32901	5097
11	BOSTON COLLEGE	Barnes, A.	ARC	Feynman, J.	NCC 2-185	2987
11	BOSTON COLLEGE	Wales, R. O.	GSFC	Saflekos, N. A.	NAG 5-227	2986
11	BOSTON UNIVERSITY	Wales, R. O.	GSFC	Hughes, W. J.	NAG 5-237	2991
11	BOSTON UNIVERSITY	Stone, J. F.	MSFC	Marscher, A. P.	NAG 8-435	2992
11	BOSTON UNIVERSITY	Stone, J. F.	MSFC	Marscher, A. P.	NAG 8-455	2993
11	BOWLING GRN STATE U	Kondo, Y.	GSFC	Gregory, S. A.	NAG 5-259	3926
11	BOWLING GRN STATE U	Kondo, Y.	GSFC	Stoner, R. E.	NAG 5-331	3927
11	BRANDEIS UNIVERSITY	Stone, J. F.	MSFC	Wardle, J. F.	NAG 8-413	3005
11	CALIF INST OF TECH	Haughney, L. C.	ARC	Phillips, T. G.	NAG 2-1	1246
11	CALIF INST OF TECH	Werner, M. W.	ARC	Leighton, R. B.	NAG 2-125	1247
11	CALIF INST OF TECH	Fimmel, R. O.	ARC	Ingersoll, A. P.	NAS 2-6556	1279
11	CALIF INST OF TECH	Werner, M. W.	ARC	Soifer, B. T.	NCA 2-90101	1290
11	CALIF INST OF TECH	Werner, M. W.	ARC	Neugebauer, G.	NCA 2-90201	1291
11	CALIF INST OF TECH	Kondo, Y.	GSFC	Sargent, W. L.	NAG 5-4	1252
11	CALIF INST OF TECH	Kondo, Y.	GSFC	Trauger, J. T.	NAG 5-66	1253
11	CALIF INST OF TECH	Kondo, Y.	GSFC	Cohen, J. G.	NAG 5-68	1254
11	CALIF INST OF TECH	Kondo, Y.	GSFC	Oke, J. B.	NAG 5-250	1255
11	CALIF INST OF TECH	Kondo, Y.	GSFC	Moore, R. L.	NAG 5-337	1257
11	CALIF INST OF TECH	White, R. A.	GSFC	Westphal, J.	NAS 5-25451	1282
11	CALIF INST OF TECH	Wales, R. O.	GSFC	Stone, E. C.	NAS 5-25789	1283
11	CALIF INST OF TECH	Boggess, A.	GSFC	Greenstein, J. L.	NSG 5381	1310
11	CALIF INST OF TECH	Stone, J. F.	MSFC	Sargent, W. L.	NAG 8-406	1258
11	CALIF INST OF TECH	Stone, J. F.	MSFC	Moore, R. L.	NAG 8-430	1259
11	CALIF INST OF TECH	Stone, J. F.	MSFC	Zirin, H.	NAG 8-438	1260
11	CALIF INST OF TECH	Stone, J. F.	MSFC	Stone, E. C.	NAS 8-27978	1286
11	CALIF INST OF TECH	Jones, J. B., Jr.	MSFC	Garmire, G. P.	NAS 8-33352	1288
11	CALIF INST OF TECH	Brunk, W. E.	HQ-EL	Muhleman, D. O.	NGL 05-002-003	1294
11	CALIF INST OF TECH	Brunk, W. E.	HQ-EL	Soifer, B. T.	NGL 05-002-140	1298
11	CALIF INST OF TECH	Brunk, W. E.	HQ-EL	Muhleman, D. O.	NGR 05-002-114	1303

# NASA'S UNIVERSITY PROGRAM

## APPENDIX - CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
11	CALIF INST OF TECH	Boggess, N. W.	HQ-EZ	Phillips, T. G.	NAGW 107	1264
11	CALIF INST OF TECH	Chipman, E. G.	HQ-EZ	Zirin, H.	NGL 05-002-034	1295
11	CALIF INST OF TECH	Weiler, E. J.	HQ-EZ	Oke, J. B.	NGL 05-002-134	1297
11	CALIF INST OF TECH	Boggess, N. W.	HQ-EZ	Neugebauer, G.	NGL 05-002-207	1301
11	CALIF INST OF TECH	Opp, A. G.	HQ-EZ	Vogt, R. E.	NGR 05-002-160	1304
11	CASE WESTERN RESERVE	Kondo, Y.	GSFC	Shore, S. N.	NAG 5-179	3995
11	CASE WESTERN RESERVE	Kaluzienski, L. J.	HQ-EZ	Frye, G. G.	NAGW 451	3997
11	CASE WESTERN RESERVE	Kaluzienski, L. J.	HQ-EZ	Frye, G.	NASW 3404	4000
11	CASE WESTERN RESERVE	Kaluzienski, L. J.	HQ-EZ	Frye, G. M.	NASW 3623	4001
11	CATHOLIC UNIVERSITY	Kondo, Y.	GSFC	Bruhweiler, F. C.	NAG 5-296	2178
11	CATHOLIC UNIVERSITY	Trombka, J. I.	GSFC	Werntz, C. W.	NSG 5066	2182
11	CITADEL MLTRY CO S C	Boggess, A.	GSFC	Adelman, S. J.	NAG 5-218	4402
11	CITY COLLEGE OF N Y	Black, D. C.	ARC	Yuan, C.	NSG 2348	3620
11	CITY COLLEGE OF N Y	Thaddeus, P.	GSFC	Arons, M.	NGL 33-013-040	3619
11	CLEMSON UNIV-CLEMSON	Kondo, Y.	GSFC	Baird, S. R.	NAG 5-238	4405
11	CLEMSON UNIV-CLEMSON	Stencel, R.	HQ-EZ	Flower, P. L.	NAGW 441	4406
11	COLUMBIA UNIVERSITY	Eiband, A. M.	GSFC	Novick, R.	NAS 5-24457	3644
11	COLUMBIA UNIVERSITY	Early, L. J.	GSFC	Novick, R.	NGR 33-008-102	3658
11	COLUMBIA UNIVERSITY	Stone, J. F.	MSFC	Morris, M.	NAG 8-425	3640
11	COLUMBIA UNIVERSITY	Stone, J. F.	MSFC	Novick, R.	NAS 8-30753	3648
11	COLUMBIA UNIVERSITY	Kaluzienski, L. J.	HQ-EZ	Novick, R.	NAGW 18	3641
11	COLUMBIA UNIVERSITY	Boggess, N. W.	HQ-EZ	Flynn, G.	NSG 7105	3661
11	CORNELL UNIVERSITY	Haughney, L. C.	ARC	Houck, J. R.	NAG 2-207	3671
11	CORNELL UNIVERSITY	Haughney, L. C.	ARC	Houck, J. R.	NGR 33-010-081	3698
11	CORNELL UNIVERSITY	Muehl, C. L.	ARC	Harwit, M. O.	NGR 33-010-146	3701
11	CORNELL UNIVERSITY	Haughney, L. C.	ARC	Harwit, M. O.	NSG 2347	3707
11	CORNELL UNIVERSITY	Haughney, L. C.	ARC	Beckwith, S.	NSG 2412	3710
11	CORNELL UNIVERSITY	Lynch, J. T.	HQ-EE	Farley, D. T.	NGR 33-010-161	3702
11	CORNELL UNIVERSITY	Brunk, W. E.	HQ-EL	Ostro, S. J.	NAGW 116	3683
11	CORNELL UNIVERSITY	Boggess, N. W.	HQ-EZ	Houck, J. R.	NSG 7324	3713
11	DARTMOUTH COLLEGE	Kondo, Y.	GSFC	Wegner, G. A.	NAG 5-287	3484
11	DARTMOUTH COLLEGE	Stone, J. F.	MSFC	Mook, D. E.	NAG 8-305	3485
11	DREXEL UNIVERSITY	Maguire, W. C.	GSFC	Abbas, M. M.	NAG 5-208	4257
11	DUKE UNIVERSITY	Stencel, R. E.	HQ-EZ	Herbst, E.	NAGW 189	3877
11	ELMHURST COLLEGE	Stone, J. F.	MSFC	Morrison, J. P.	NAG 8-427	2436
11	FLORIDA STATE UNIV	Brunk, W. E.	HQ-EL	Hunt, R. H.	NGR 10-004-056	2266
11	GEORGIA STATE UNIV	Kondo, Y.	GSFC	Miller, H. R.	NAG 5-242	2388
11	HARVARD UNIVERSITY	Boggess, A.	GSFC	Grindlay, J. E.	NAG 5-72	3009
11	HARVARD UNIVERSITY	Kondo, Y.	GSFC	Geller, M. J.	NAG 5-189	3011
11	HARVARD UNIVERSITY	Stone, J. F.	MSFC	Rosner, R.	NAG 8-445	3013
11	HARVARD UNIVERSITY	Butler, D. M.	HQ-EE	Rosner, R.	NAGW 79	3016
11	HARVARD UNIVERSITY	Chandra, S.	HQ-EE	McElroy, M. B.	NAGW 359	3017
11	HARVARD UNIVERSITY	Rosendhal, J. D.	HQ-EP	Field, G. B.	NSG 7176	3041
11	HARVARD UNIVERSITY	Kaluzienski, L. J.	HQ-EZ	Cameron, A. G.	NGR 22-007-272	3035
11	HARVARD UNIVERSITY	Stencel, R. E.	HQ-EZ	Parkinson, W. H.	NSG 7304	3042
11	HOUSTON BAPTIST UNIV	Potter, A. E.	JSC	Morgan, T. H.	NSG 9038	4488
11	HOWARD UNIVERSITY	Haughney, L. C.	ARC	Richard, L. J.	NAG 2-78	2222
11	HOWARD UNIVERSITY	Stone, J. F.	MSFC	Kumar, C. K.	NAG 8-395	2233
11	INDIANA U-BLOOMINGTN	Cuzzi, J. N.	ARC	Weber, N. V.	NCA 2-335101	2562
11	INDIANA U-BLOOMINGTN	Kondo, Y.	GSFC	Johnson, H. R.	NAG 5-182	2553
11	INDIANA U-BLOOMINGTN	Kondo, Y.	GSFC	Mufson, S. L.	NAG 5-198	2554
11	INDIANA U-BLOOMINGTN	Kondo, Y.	GSFC	Honeycutt, R. K.	NAG 5-347	2555
11	INDIANA U-BLOOMINGTN	Stone, J. F.	MSFC	Mufson, S. L.	NAG 8-331	2556
11	INDIANA U-BLOOMINGTN	Stone, J. F.	MSFC	Durisen, R. H.	NAG 8-362	2557
11	INDIANA U-BLOOMINGTN	Stone, J. F.	MSFC	Mufson, S. L.	NAG 8-365	2558
11	INDIANA U-BLOOMINGTN	Stone, J. F.	MSFC	Mufson, S. L.	NAG 8-396	2559
11	IOWA STATE UNIV	Kondo, Y.	GSFC	Willson, L. A.	NAG 5-284	2639
11	IOWA STATE UNIV	Stone, J. F.	MSFC	Lamb, R. C.	NAG 8-360	2641
11	IOWA STATE UNIV	Stone, J. F.	MSFC	Lamb, R. C.	NAG 8-426	2642
11	JOHNS HOPKINS UNIV	Boggess, A.	GSFC	Moos, H. W.	NAG 5-327	2814

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11	JOHNS HOPKINS UNIV	Young, E. W.	GSFC	Davidson, A. F.	NAS 5-26057	2827
11	JOHNS HOPKINS UNIV	Early, L. J.	GSFC	Feldman, P. D.	NGR 21-001-001	2837
11	JOHNS HOPKINS UNIV	Kondo, Y.	GSFC	Moos, H. W.	NSG 5393	2845
11	JOHNS HOPKINS UNIV	Owens, J.	MSFC	Davidson, A. F.	NAS 5-27000	2829
11	JOHNS HOPKINS UNIV	O'dell, C. R.	MSFC	Fastie, W. G.	NAS 8-32903	2830
11	JOHNS HOPKINS UNIV	Humphreys, J. T.	MSFC	Fastie, W. G.	NAS 8-35348	2831
11	JOHNS HOPKINS UNIV	Brunk, W. E.	HQ-EL	Brown, R. A.	NAGW 383	2821
11	JOHNS HOPKINS UNIV	Weiler, E. J.	HQ-EZ	Moos, H. W.	NAGW 16	2817
11	JOHNS HOPKINS UNIV	Stencel, R. E.	HQ-EZ	Kargon, R. H.	NASW 3691	2835
11	LEHIGH UNIVERSITY	Kondo, Y.	GSFC	McCluskey, G. E.	NSG 5386	4282
11	LA ST U&A&M COL-BRGE	Kondo, Y.	GSFC	Drilling, J. S.	NAG 5-71	2775
11	LA ST U&A&M COL-BRGE	Kondo, Y.	GSFC	Chanmugam, G.	NAG 5-197	2776
11	LA ST U&A&M COL-BRGE	Stencel, R. E.	HQ-EZ	Henry, R. J.	NAGW 481	2779
11	MASS INST OF TECH	Fimmel, R. O.	ARC	Pettingill, G. H.	NAS 2-9473	3132
11	MASS INST OF TECH	Fimmel, R. O.	ARC	Shapiro, I. I.	NAS 2-9483	3133
11	MASS INST OF TECH	Haughney, L. C.	ARC	Elliot, J. L.	NSG 2342	3191
11	MASS INST OF TECH	Boggess, A.	GSFC	McClintock, J. E.	NAG 5-43	3098
11	MASS INST OF TECH	Boggess, A.	GSFC	Kallman, T. R.	NAG 5-170	3105
11	MASS INST OF TECH	Kondo, Y.	GSFC	Cowie, L. L.	NAG 5-192	3106
11	MASS INST OF TECH	Kondo, Y.	GSFC	Tremaine, S. D.	NAG 5-248	3107
11	MASS INST OF TECH	Bullock, G.	GSFC	Clark, G. W.	NAS 5-24441	3137
11	MASS INST OF TECH	Mather, J. C.	GSFC	Weiss, R. G.	NAS 5-24493	3138
11	MASS INST OF TECH	Wales, R. O.	GSFC	Bridge, H. S.	NAS 5-25790	3139
11	MASS INST OF TECH	Morgan, S. H.	GSFC	Burke, B. F.	NAS 8-34545	3151
11	MASS INST OF TECH	Early, L. J.	GSFC	Rappaport, S. A.	NGR 22-009-730	3180
11	MASS INST OF TECH	Corrigan, R. D.	LERC	Keith, T. G.	NAS 8-27975	3148
11	MASS INST OF TECH	Stone, J. F.	MSFC	Bradt, H. V.	NAS 8-27972	3147
11	MASS INST OF TECH	Stone, J. F.	MSFC	Clark, G. W.	NAS 8-30752	3149
11	MASS INST OF TECH	Gaskins, M. A.	HQ-E	Bridge, H. S.	NGL 22-009-638	3172
11	MASS INST OF TECH	Brunk, W. E.	HQ-EL	Staff, L. G.	NAGW 232	3122
11	MASS INST OF TECH	Brunk, W. E.	HQ-EL	Staelin, D. H.	NAGW 373	3124
11	MASS INST OF TECH	Brunk, W. E.	HQ-EL	Pettengill, G. H.	NGR 22-009-672	3178
11	MASS INST OF TECH	Brunk, W. E.	HQ-EL	Elliot, J. L.	NSG 7526	3206
11	MASS INST OF TECH	Brunk, W. E.	HQ-EL	Shapiro, I. I.	NSG 7556	3207
11	MASS INST OF TECH	Kaluzienski, L. J.	HQ-EZ	Ricker, G. R.	NAGW 14	3114
11	MASS INST OF TECH	Weiler, E. J.	HQ-EZ	Cowie, L. L.	NAGW 208	3120
11	MASS INST OF TECH	Kaluzienski, L. J.	HQ-EZ	Clark, G. W.	NAGW 442	3128
11	MASS INST OF TECH	Boggess, N. W.	HQ-EZ	Weiss, R.	NGR 22-009-526	3176
11	MASS INST OF TECH	Boggess, N. W.	HQ-EZ	Kleinmann, S.	NSG 7186	3202
11	MASS INST OF TECH	Kaluzienski, L. J.	HQ-EZ	Ricker, G. R.	NSG 7339	3205
11	MASS INST OF TECH	Kaluzienski, L. J.	HQ-EZ	Clark, G. W.	NSG 7643	3210
11	MICHIGAN STATE UNIV	Kondo, Y.	GSFC	Baird, S. R.	NAG 5-291	3262
11	MIDDLEBURY COLLEGE	Stone, J. F.	MSFC	Winkler, P. F., Jr.	NAG 8-389	4778
11	MISSISSIPPI STATE U	Parker, G. A.	MSFC	Ingels, F. M.	NAS 8-33570	3390
11	MORGAN STATE UNIV	Baker, G. R.	GSFC	Hammond, E. C., Jr.	NSG 5074	2851
11	NEW MEX INST MINING	Caroff, L. J.	ARC	Eilek, J. A.	NCA 2-511101	3581
11	NEW MEX INST MINING	Caroff, L. J.	ARC	Eilek, J. A.	NCA 2-511301	3582
11	NEW MEX INST MINING	Michalitsianos 1, A.	GSFC	Donaruma, L. G.	NCA 5-71	3583
11	NEW MEX INST MINING	Stone, J. F.	MSFC	Gibson, D. M.	NAG 8-394	3578
11	NEW MEX ST U-LAS CR	Brunk, W. E.	HQ-EL	Beebe, R. F.	NGL 32-003-001	3594
11	NEW MEX ST U-LAS CR	Kaluzienski, L. J.	HQ-EZ	Golden, R. L.	NAGW 110	3584
11	NEW YORK UNIVERSITY	Kondo, Y.	GSFC	Glassgold, A. E.	NAG 5-73	3729
11	NEW YORK UNIVERSITY	Jones, J. B.	MSFC	Glassgold, A. E.	NAG 8-337	3731
11	NEW YORK UNIVERSITY	Stone, J. F.	MSFC	Glassgold, A. E.	NAG 8-393	3732
11	NEW YORK UNIVERSITY	Stone, J. F.	MSFC	Bregman, J. N.	NAG 8-449	3733
11	NEW YORK UNIVERSITY	Stencel, R. E.	HQ-EZ	Glassgold, A. E.	NGR 33-016-196	3737
11	NORTHWESTERN UNIV	Early, L. J.	GSFC	Ulmer, M. P.	NAG 5-181	2452
11	NORTHWESTERN UNIV	Stone, J. F.	MSFC	Ulmer, M. P.	NAG 8-367	2453
11	NORTHWESTERN UNIV	Stone, J. F.	MSFC	Ulmer, M. P.	NAG 8-368	2454
11	NORTHWESTERN UNIV	Stone, J. F.	MSFC	Taam, R. E.	NAG 8-415	2455

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11	NORTHWESTERN UNIV	Stone, J. F.	MSFC	Ulmer, M. P.	NAG 8-416	2456
11	NORTHWESTERN UNIV	Jones, J. B., Jr.	MSFC	Ulmer, M. P.	NAS 8-33010	2459
11	NORTHWESTERN UNIV	Jones, J. B., Jr.	MSFC	Ulmer, M. P.	NAS 8-33354	2460
11	NORTHWESTERN UNIV	Weiler, E. J.	HQ-EZ	Huang, S. S.	NGL 14-007-041	2463
11	OHIO STATE UNIV	Kondo, Y.	GSFC	Slettebak, A.	NAG 5-52	4078
11	OHIO STATE UNIV	Kondo, Y.	GSFC	Linsky, J. L.	NAG 5-266	4079
11	OHIO STATE UNIV	Kondo, Y.	GSFC	Wing, R. F.	NSG 5368	4105
11	PENN STATE U-UNIV PK	Early, L. J.	GSFC	Garmire, G. P.	NAG 5-100	4297
11	PENN STATE U-UNIV PK	Boggess, A.	GSFC	Ramsey, L.	NAG 5-201	4299
11	PENN STATE U-UNIV PK	Boggess, A.	GSFC	Wegner, G. A.	NAG 5-214	4300
11	PENN STATE U-UNIV PK	Kondo, Y.	GSFC	Weedman, D. W.	NAG 5-334	4302
11	PENN STATE U-UNIV PK	Kondo, Y.	GSFC	Nousek, J. A.	NAG 5-335	4303
11	PENN STATE U-UNIV PK	Klinglesmith, D. A.	GSFC	Usher, P. D.	NAG 5-361	4304
11	PENN STATE U-UNIV PK	Bullock, G. D.	GSFC	Garmire, G.	NAS 5-26809	4318
11	PENN STATE U-UNIV PK	Stone, J. F.	MSFC	Garmire, G. P.	NAG 8-434	4307
11	PENN STATE U-UNIV PK	Kaluziensi, L. J.	HQ-EZ	Garmire, G.	NAGW 108	4308
11	PENN STATE U-UNIV PK	Kondo, Y.	GSFC	York, D. G.	NAG 5-48	3528
11	PRINCETON UNIVERSITY	Bullock, G. D.	GSFC	Spitzer, L., Jr.	NAS 5-23576	3543
11	PRINCETON UNIVERSITY	Mather, J. C.	GSFC	Wilkinson, D. T.	NAS 5-24486	3544
11	PRINCETON UNIVERSITY	White, R. A.	GSFC	Groth, E. J.	NAS 5-25084	3545
11	PRINCETON UNIVERSITY	Cyphers, H.	GSFC	Jenkins, E. B.	NAS 5-26268	3547
11	PRINCETON UNIVERSITY	Mather, J.	GSFC	Wilkenson, D. T.	NAS 5-27590	3549
11	PRINCETON UNIVERSITY	Kondo, Y.	GSFC	Jenkins, E. B.	NSG 5248	3560
11	PRINCETON UNIVERSITY	Swearingen, J. C.	MSFC	Bahcall, N. A.	NAG 8-363	3531
11	PRINCETON UNIVERSITY	Stone, J. F.	MSFC	Bahcall, N. A.	NAG 8-420	3532
11	PRINCETON UNIVERSITY	Weiler, E. J.	HQ-EZ	York, D.	NAGW 10	3533
11	PRINCETON UNIVERSITY	Boggess, N. W.	HQ-EZ	Wilkinson, D.	NAGW 445	3537
11	PRINCETON UNIVERSITY	Stencel, R. E.	HQ-EZ	Rogerson, J. B., Jr.	NAGW 477	3538
11	PRINCETON UNIVERSITY	Stencel, R. E.	HQ-EZ	Draine, B. T.	NGL 31-001-007	3553
11	PRINCETON UNIVERSITY	Weiler, E. J.	HQ-EZ	Bahcall, N. A.	NSG 7256	3561
11	PRINCETON UNIVERSITY	Boggess, N. W.	HQ-EZ	Wilkinson, D. T.	NSG 7302	3563
11	PRINCETON UNIVERSITY	Weiler, E. J.	HQ-EZ	Jenkins, E. B.	NSG 7618	3565
11	RENSSELAER POLY-NY	Haughney, L. C.	ARC	Kutner, M. L.	NAG 2-198	3754
11	RENSSELAER POLY-NY	Brinton, H. C.	HQ-EL	Ferris, J. P.	NAGW 476	3767
11	RICE UNIVERSITY	Kondo, Y.	GSFC	Dufour, R. J.	NAG 5-262	4499
11	RICE UNIVERSITY	Parker, R. A.	JSC	Dufour, R. J.	NAS 9-16596	4509
11	RICE UNIVERSITY	Rosendhal, J. D.	HQ-E	Michel, F. C.	NAGW 379	4504
11	RICE UNIVERSITY	Weiler, E. J.	HQ-EZ	O'dell, C. R.	NAGW 384	4505
11	RUTGERS U-N BRUNSWK	Kondo, Y.	GSFC	Matilsky, T.	NAG 5-70	3566
11	RUTGERS U-N BRUNSWK	Dietrich, J. W.	JSC	Herzog, G. F.	NAG 9-26	3568
11	RUTGERS U-N BRUNSWK	Stone, J. F.	MSFC	Matilsky, T.	NAG 8-454	3567
11	SAN DIEGO STATE UNIV	Swearingen, J. C.	MSFC	Young, A.	NAG 8-356	1360
11	SAN DIEGO STATE UNIV	Stencel, R. E.	HQ-EZ	Lee, L.	NAGW 319	1364
11	SAN FRAN STATE UNIV	Hollenbach, D.	ARC	Tielens, A.	NCA 2-660303	1375
11	SAN FRAN STATE UNIV	Stone, J. F.	MSFC	Lea, S.	NAG 8-385	1365
11	SAN FRAN STATE UNIV	Stone, J. F.	MSFC	Lea, S. M.	NAG 8-418	1366
11	SAN FRAN STATE UNIV	Stone, J. F.	MSFC	Lea, S. M.	NAG 8-443	1367
11	STANFORD UNIVERSITY	Werner, M. W.	ARC	Walker, A. B.	NCA 2-745207	1525
11	STANFORD UNIVERSITY	Erickson, E. F.	ARC	Petrosian, V.	NCA 2-745304	1530
11	STANFORD UNIVERSITY	Kondo, Y.	GSFC	Walker, A. B.	NAG 5-202	1479
11	STANFORD UNIVERSITY	Bullock, G. D.	GSFC	Helliwell, R. A.	NAS 5-25688	1497
11	STANFORD UNIVERSITY	Wales, R. O.	GSFC	Helliwell, R. A.	NAS 5-25744	1498
11	STANFORD UNIVERSITY	Campbell, C. E.	GSFC	Hofstadter, R.	NAS 5-26020	1499
11	STANFORD UNIVERSITY	Hartman, R. C.	GSFC	Hofstadter, R.	NAS 5-26682	1500
11	STANFORD UNIVERSITY	Hartman, R. C.	GSFC	Hofstadter, R.	NAS 5-27557	1501
11	STANFORD UNIVERSITY	Chappett, C. R.	MSFC	Banks, P.	NAG 8-16	1483
11	STANFORD UNIVERSITY	Stone, J. F.	MSFC	Walker, A. B.	NAG 8-325	1484
11	STANFORD UNIVERSITY	Brinton, H. C.	HQ-EL	Eshelman, V. R.	NAGW 326	1492
11	STANFORD UNIVERSITY	Stencel, R. E.	HQ-EZ	Wagoner, R. V.	NAGW 299	1491
11	STANFORD UNIVERSITY	Chipman, E. G.	HQ-EZ	Wilcox, J. M.	NGR 05-020-559	1587

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11	STANFORD UNIVERSITY	Kaluzienski, L. J.	HQ-EZ	Sturrock, P. A.	NGR 05-020-668	1590
11	STANFORD UNIVERSITY	Chipman, E. G.	HQ-EZ	Petrosian, V.	NSG 7092	1605
11	STANFORD UNIVERSITY	Carter, C. H.	HQ-LB	Walker, A. B., Jr.	NGT 05-020-803	1595
11	ST U NY COL-GENESE	Corrigan, J. P.	GSFC	Meisel, D. D.	NAG 5-113	3854
11	STATE U NY-STONY BRK	Haughney, L. C.	ARC	Knacke, R.	NAG 2-56	3818
11	STATE U NY-STONY BRK	Kondo, Y.	GSFC	Caldwell, J.	NAG 5-275	3822
11	STATE U NY-STONY BRK	Bogges, A.	GSFC	Owen, T.	NSG 5250	3847
11	STATE U NY-STONY BRK	O'dell, C. R.	MSFC	Caldwell, J. J.	NAS 8-32904	3835
11	STATE U NY-STONY BRK	Brunk, W. E.	HQ-EL	Owen, T. C.	NGR 33-015-141	3843
11	STATE U NY-STONY BRK	Brunk, W. E.	HQ-EL	Knacke, R. F.	NSG 7286	3849
11	STATE U NY-STONY BRK	Brunk, W. E.	HQ-EL	Caldwell, J. J.	NSG 7320	3850
11	STATE U NY-STONY BRK	Kaluzienski, L. J.	HQ-EZ	Forman, M. A.	NGR 33-015-180	3844
11	UNIV ALA-HUNTSVILLE	Chappell, R.	MSFC	Horowitz, J.	NAG 8-18	1026
11	UNIV OF ARIZONA	Black, D. C.	ARC	McMillan, R. S.	NAG 2-52	1121
11	UNIV OF ARIZONA	McCreight, C. R.	ARC	Low, F. J.	NAG 2-154	1123
11	UNIV OF ARIZONA	Melugin, R.	ARC	Angel, J. R.	NAG 2-161	1124
11	UNIV OF ARIZONA	Haughney, L. C.	ARC	Larson, H. P.	NAG 2-206	1125
11	UNIV OF ARIZONA	Hall, C. F.	ARC	Gehrels, A. M.	NAS 2-6265	1175
11	UNIV OF ARIZONA	Haughney, L. C.	ARC	Larson, H. P.	NAS 2-10890	1177
11	UNIV OF ARIZONA	Fimmel, R. O.	ARC	Tomasko, M. G.	NAS 2-11647	1178
11	UNIV OF ARIZONA	Erickson, E. F.	ARC	Thompson, R. I.	NCA 2-40302	1202
11	UNIV OF ARIZONA	Haughney, L. C.	ARC	Larson, H. P.	NGR 03-002-332	1211
11	UNIV OF ARIZONA	Kondo, Y.	GSFC	Green, R. F.	NAG 5-38	1132
11	UNIV OF ARIZONA	Bogges, A.	GSFC	Giampapa, M. S.	NAG 5-57	1133
11	UNIV OF ARIZONA	Donn, B.	GSFC	Larson, S.	NAG 5-86	1134
11	UNIV OF ARIZONA	Bogges, A.	GSFC	Turnshek, D. A.	NAG 5-221	1137
11	UNIV OF ARIZONA	Kondo, Y.	GSFC	Puetter, R. C.	NAG 5-264	1138
11	UNIV OF ARIZONA	Vitagliano, H. D.	GSFC	Weymann, R. J.	NAS 5-25733	1180
11	UNIV OF ARIZONA	Schmadabeck, R.	GSFC	Beckers, J. M.	NAS 5-25955	1181
11	UNIV OF ARIZONA	Arens, J. F.	GSFC	Low, F. J.	NAS 5-26575	1182
11	UNIV OF ARIZONA	Stouffer, C.	GSFC	Beckers, J. M.	NAS 5-27519	1185
11	UNIV OF ARIZONA	Stone, J. F.	MSFC	Stoeke, J. T.	NAG 8-370	1141
11	UNIV OF ARIZONA	Stone, J. F.	MSFC	Green, R.	NAG 8-380	1142
11	UNIV OF ARIZONA	Stone, J. F.	MSFC	Scott, J.	NAG 8-387	1143
11	UNIV OF ARIZONA	Stone, J. F.	MSFC	Tapia, S.	NAG 8-402	1144
11	UNIV OF ARIZONA	Stone, J. F.	MSFC	Liebert, J. W.	NAG 8-403	1145
11	UNIV OF ARIZONA	Manning, H. S.	MSFC	Stoeke, J. T.	NAG 8-442	1146
11	UNIV OF ARIZONA	Rosendhal, J. D.	HQ-E	Angel, J. R.	NAGW 121	1153
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Drummond, J. D.	NAGW 224	1161
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Larson, S. M.	NAGW 247	1163
11	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Sill, G.	NAGW 248	1164
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Zellner, B. H.	NAGW 414	1171
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Gehrels, T.	NASW 3454	1193
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Hsieh, K. C.	NASW 3627	1194
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Gehrels, T.	NASW 3655	1195
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Gehrels, T.	NASW 3719	1197
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Smith, J. C.	NGL 03-002-002	1204
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Gehrels, T.	NGL 03-002-081	1205
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Gehrels, A. M.	NGR 03-002-219	1209
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Hubbard, W. B.	NSG 7045	1221
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Fink, U. W.	NSG 7070	1222
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Lebofsky, L. A.	NSG 7114	1224
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Zellner, B. H.	NSG 7502	1232
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Brown, R. A.	NSG 7634	1239
11	UNIV OF ARIZONA	Kaluzienski, L. J.	HQ-EZ	Scott, J. S.	NAGW 124	1154
11	UNIV OF ARIZONA	Bogges, N. W.	HQ-EZ	Low, F. J.	NASW 3703	1196
11	UNIV OF ARIZONA	Bogges, N. W.	HQ-EZ	Low, F. J.	NGR 03-002-269	1210
11	UNIV OF ARIZONA	Bogges, N. W.	HQ-EZ	Hoffman, W. F.	NGR 03-002-371	1213
11	UNIV OF ARIZONA	Kaluzienski, L. J.	HQ-EZ	Jokipii, J. R.	NSG 7101	1223
11	UNIV OF ARIZONA	Bogges, N. W.	HQ-EZ	Craine, E. R.	NSG 7368	1228

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
11	UNIV OF ARIZONA	Owens, F. C.	HQ-LB	Larson, H. P.	NGT 03-002-801	1215
11	UNIV CALIF-BERKELEY	Haughney, L. C.	ARC	McKee, C. F.	NAG 2-200	1608
11	UNIV CALIF-BERKELEY	Haughney, L. C.	ARC	Townes, C. H.	NAG 2-208	1609
11	UNIV CALIF-BERKELEY	Haughney, L. C.	ARC	Betz, A. L.	NAG 2-254	1610
11	UNIV CALIF-BERKELEY	Cuzzi, J. N.	ARC	Shu, F. H.	NCA 2-50102	1660
11	UNIV CALIF-BERKELEY	Erickson, E. F.	ARC	Heiles, C. E.	NCC 2-142	1670
11	UNIV CALIF-BERKELEY	Haughney, L. C.	ARC	Townes, C. H.	NGR 05-003-511	1686
11	UNIV CALIF-BERKELEY	Kondo, Y.	GSFC	Bowyer, C. S.	NAG 5-69	1615
11	UNIV CALIF-BERKELEY	Kondo, Y.	GSFC	Kuhi, L. V.	NAG 5-278	1618
11	UNIV CALIF-BERKELEY	Kondo, Y.	GSFC	Basri, G.	NAG 5-345	1619
11	UNIV CALIF-BERKELEY	Willis, S. B.	GSFC	Bowery	NAS 5-24445	1643
11	UNIV CALIF-BERKELEY	Mather, J. C.	GSFC	Usher, D. A.	NAS 5-25007	1644
11	UNIV CALIF-BERKELEY	Hobbs, R.	GSFC	King, I.	NAS 5-25070	1645
11	UNIV CALIF-BERKELEY	Wales, R. O.	GSFC	Mozer, F. S.	NAS 5-25770	1646
11	UNIV CALIF-BERKELEY	Porreca, G.	GSFC	Anderson, D. A.	NAS 5-25892	1647
11	UNIV CALIF-BERKELEY	Wales, R. O.	GSFC	Anderson, K. A.	NAS 5-25980	1648
11	UNIV CALIF-BERKELEY	Bullock, G. D.	GSFC	Bowyer, C. S.	NAS 5-26837	1649
11	UNIV CALIF-BERKELEY	O'Brien, J. J.	GSFC	Hudson, M. K.	NAS 5-26867	1652
11	UNIV CALIF-BERKELEY	Mather, J. C.	GSFC	Smoot, G. F.	NAS 5-27592	1654
11	UNIV CALIF-BERKELEY	Early, L. J.	GSFC	Bowyer, C. S.	NGR 05-003-450	1682
11	UNIV CALIF-BERKELEY	Jones, J. L.	LARC	Price, P. B.	NAS 1-17426	1637
11	UNIV CALIF-BERKELEY	Stone, J. F.	MSFC	Kuhi, L. V.	NAG 8-397	1622
11	UNIV CALIF-BERKELEY	Stone, J. F.	MSFC	Bowyer, C. S.	NAG 8-440	1623
11	UNIV CALIF-BERKELEY	Stone, J. F.	MSFC	Price, P. B.	NAG 8-446	1624
11	UNIV CALIF-BERKELEY	Brunk, W. E.	HQ-EL	Spinrad, H.	NAGW 270	1631
11	UNIV CALIF-BERKELEY	Brunk, W. E.	HQ-EL	Lin, R. P.	NASW 3575	1657
11	UNIV CALIF-BERKELEY	Brunk, W. E.	HQ-EL	Townes, C. H.	NGR 05-003-452	1684
11	UNIV CALIF-BERKELEY	Brunk, W. E.	HQ-EL	Welch, W. J.	NSG 7152	1694
11	UNIV CALIF-BERKELEY	Kaluzienski, L. J.	HQ-EZ	Lampton, M. L.	NAGW 44	1626
11	UNIV CALIF-BERKELEY	Boggess, N. W.	HQ-EZ	Smoot, G. F.	NAGW 66	1627
11	UNIV CALIF-BERKELEY	Weiler, E. J.	HQ-EZ	Spinrad, H.	NAGW 282	1632
11	UNIV CALIF-BERKELEY	Stencel, R. E.	HQ-EZ	Townes, C. H.	NGL 05-003-272	1678
11	UNIV CALIF-BERKELEY	Kaluzienski, L. J.	HQ-EZ	Price, P. B.	NGR 05-003-376	1681
11	UNIV CALIF-BERKELEY	Kaluzienski, L. J.	HQ-EZ	Heckman, H. H.	NGR 05-003-513	1687
11	UNIV CALIF-BERKELEY	Stencel, R. E.	HQ-EZ	Silk, J. I.	NGR 05-003-578	1688
11	UNIV CALIF-BERKELEY	Boggess, N. W.	HQ-EZ	Richards, P. L.	NSG 7205	1695
11	UNIV CALIF-BERKELEY	Kaluzienski, L. J.	HQ-EZ	Lin, R. P.	NSG 7592	1701
11	UNIV CALIF-BERKELEY	Owens, F. C.	HQ-LB	Shu, F. H.	NGT 05-003-802	1691
11	UNIV CALIF-IRVINE	Kaluzienski, L. J.	HQ-EZ	Tucker, W. H.	NAGW 109	1727
11	UNIV CALIF-L ANGELES	Corrigan, J. P.	GSFC	Plavec, M. J.	NAG 5-112	1749
11	UNIV CALIF-L ANGELES	Corrigan, J. P.	GSFC	Jura, M. A.	NAG 5-116	1750
11	UNIV CALIF-L ANGELES	Kondo, Y.	GSFC	Grandi, S. A.	NAG 5-210	1752
11	UNIV CALIF-L ANGELES	Vitagliano, H. D.	GSFC	Jura, M. A.	NAS 5-25657	1770
11	UNIV CALIF-L ANGELES	Wales, R. O.	GSFC	Russell, C. T.	NAS 5-25772	1771
11	UNIV CALIF-L ANGELES	Mather, J. C.	GSFC	Wright, E. L.	NAS 5-26994	1777
11	UNIV CALIF-L ANGELES	Mather, J. C.	GSFC	Wright, E. L.	NAS 5-27670	1778
11	UNIV CALIF-L ANGELES	Kondo, Y.	GSFC	Plavec, M. J.	NSG 5272	1802
11	UNIV CALIF-L ANGELES	Kondo, Y.	GSFC	Aller, L. H.	NSG 5358	1804
11	UNIV CALIF-L ANGELES	Quaide, W. L.	HQ-EL	Nicol, M. F.	NAGW 104	1760
11	UNIV CALIF-L ANGELES	Stencel, R. E.	HQ-EZ	Jura, M. A.	NAGW 80	1758
11	UNIV CALIF-L ANGELES	Kaluzienski, L. J.	HQ-EZ	Kennel, C. F.	NSG 7341	1808
11	UNIV CALIF-RIVERSIDE	Kaluzienski, L. J.	HQ-EZ	White, R. S.	NGR 05-008-022	1813
11	UNIV CALIF-SAN DIEGO	Fimmel, R. O.	ARC	Fillius, R. W.	NAS 2-6552	1847
11	UNIV CALIF-SAN DIEGO	Haughney, L. C.	ARC	Jones, B.	NGR 05-005-055	1876
11	UNIV CALIF-SAN DIEGO	Boggess, A.	GSFC	Worrall, D. M.	NAG 5-63	1820
11	UNIV CALIF-SAN DIEGO	Boggess, A.	GSFC	Smith, H. E.	NAG 5-194	1822
11	UNIV CALIF-SAN DIEGO	Kondo, Y.	GSFC	Puetter, R. C.	NAG 5-195	1823
11	UNIV CALIF-SAN DIEGO	Wales, R. O.	GSFC	Tobert, R. B.	NAG 5-229	1824
11	UNIV CALIF-SAN DIEGO	Kondo, Y.	GSFC	Coehen, R. D.	NAG 5-364	1827
11	UNIV CALIF-SAN DIEGO	White, R. A.	GSFC	Harms, R. A.	NAS 5-24463	1848

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11	UNIV CALIF-SAN DIEGO	Shannon, J. L.	GSFC	Beaver, E. A.	NAS 5-25054	1849
11	UNIV CALIF-SAN DIEGO	Jones, J. B.	MSFC	Burbidge, E. M.	NAG 8-340	1829
11	UNIV CALIF-SAN DIEGO	Stone, J. F.	MSFC	Worrall, D. M.	NAG 8-377	1830
11	UNIV CALIF-SAN DIEGO	Stone, J. F.	MSFC	Peterson, L. E.	NAS 8-27974	1858
11	UNIV CALIF-SAN DIEGO	Rosendhal, J. D.	HQ-E	Whipple, E. C., Jr.	NAGW 399	1844
11	UNIV CALIF-SAN DIEGO	Brinton, H. C.	HQ-EL	Alfven, H.	NGR 05-009-110	1877
11	UNIV CALIF-SAN DIEGO	Kaluzienski, L. J.	HQ-EZ	Felten, J. E.	NAGW 12	1834
11	UNIV CALIF-SAN DIEGO	Stencel, R. E.	HQ-EZ	Canfield, R. C.	NAGW 30	1836
11	UNIV CALIF-SAN DIEGO	Opp, A. G.	HQ-EZ	Matteson, J. L.	NAGW 449	1845
11	UNIV CALIF-SAN DIEGO	Weiler, E. J.	HQ-EZ	Hier, R. G.	NASW 3667	1866
11	UNIV CALIF-SAN DIEGO	Boggess, N. W.	HQ-EZ	Jones, B.	NASW 3702	1868
11	UNIV CALIF-SAN DIEGO	Kaluzienski, L. J.	HQ-EZ	Gould, R. J.	NGL 05-005-004	1870
11	UNIV CALIF-SAN DIEGO	Weiler, E. J.	HQ-EZ	McIlwain, C. E.	NGR 05-009-188	1878
11	UNIV CALIF-SAN DIEGO	Kaluzienski, L. J.	HQ-EZ	Rothschild, R. E.	NSG 7294	1884
11	UNIV CALIF-SAN DIEGO	Stencel, R. E.	HQ-EZ	Burbidge, E. M.	NSG 7377	1885
11	UNIV CALIF-SAN DIEGO	Kaluzienski, L. J.	HQ-EZ	Lingenfelter, R. E.	NSG 7541	1887
11	UNIV CALIF-S CRUZ	Scargle, J. D.	ARC	Jones, B. F.	NAG 2-241	1944
11	UNIV CALIF-S CRUZ	Black, D. C.	ARC	Bodenheimer, P.	NCA 2-690102	1951
11	UNIV CALIF-S CRUZ	Erickson, E. F.	ARC	Rank, D. M.	NCA 2-690301	1952
11	UNIV CALIF-S CRUZ	McCreight, C. R.	ARC	Rank, D. M.	NCC 2-169	1953
11	UNIV CALIF-S CRUZ	Boggess, A.	GSFC	Wampler, E. J.	NAG 5-175	1945
11	UNIV CALIF-S CRUZ	Kondo, Y.	GSFC	Miller, J. S.	NAG 5-352	1946
11	UNIV CALIF-S CRUZ	Kondo, Y.	GSFC	Herbig, G. H.	NSG 5361	1956
11	UNIV CALIF-S CRUZ	Swearingen, J. C.	MSFC	Miller, J. S.	NAG 8-352	1947
11	UNIV CALIF-S CRUZ	Stone, J. F.	MSFC	Vogt, S. S.	NAG 8-407	1948
11	UNIV CALIF-S CRUZ	Kaluzienski, L. J.	HQ-EZ	Faulkner, J.	NAGW 195	1949
11	UNIV CALIF-S CRUZ	Kaluzienski, L. J.	HQ-EZ	Woosley, S. E.	NAGW 475	1950
11	UNIV CALIF-S CRUZ	Boggess, N. W.	HQ-EZ	Rank, D. M.	NGR 05-061-015	1954
11	UNIV CALIF-S CRUZ	Weiler, E. J.	HQ-EZ	Miller, J. S.	NSG 7503	1957
11	UNIV OF CHICAGO	Smith, B. F.	ARC	Miller, R. H.	NCA 2-108101	2493
11	UNIV OF CHICAGO	Roellig, T. P.	ARC	Hildebrand, R. H.	NCA 2-108201	2494
11	UNIV OF CHICAGO	Smith, B. F.	ARC	Miller, R. H.	NCC 2-265	2495
11	UNIV OF CHICAGO	Haughney, L. C.	ARC	Harper, D. A., Jr.	NGR 14-001-227	2506
11	UNIV OF CHICAGO	Haughney, L. C.	ARC	Hildebrand, R. H.	NSG 2057	2508
11	UNIV OF CHICAGO	Kondo, Y.	GSFC	Hobbs, L. M.	NAG 5-255	2473
11	UNIV OF CHICAGO	Wales, R. O.	GSFC	Simpson, J. A.	NAS 5-25731	2489
11	UNIV OF CHICAGO	Wales, R. O.	GSFC	Meyer, P.	NAS 5-26680	2490
11	UNIV OF CHICAGO	Dietrich, J. W.	JSC	Clayton, R. N.	NAG 9-51	2478
11	UNIV OF CHICAGO	Brunk, W. E.	HQ-EL	Hildebrand, R. H.	NAGW 4	2481
11	UNIV OF CHICAGO	Kaluzienski, L. J.	HQ-EZ	Arnett, W. D.	NAGW 123	2482
11	UNIV OF CHICAGO	Stencel, R. E.	HQ-EZ	York, D. G.	NAGW 405	2483
11	UNIV OF CHICAGO	Kaluzienski, L. J.	HQ-EZ	Parker, E. N.	NGL 14-001-001	2496
11	UNIV OF CHICAGO	Opp, A. G.	HQ-EZ	Meyer, P.	NGL 14-001-005	2497
11	UNIV OF CHICAGO	Opp, A. G.	HQ-EZ	Simpson, J. A.	NGL 14-001-006	2498
11	UNIV OF CHICAGO	Weiler, E. J.	HQ-EZ	Hobbs, L. M.	NGR 14-001-147	2505
11	UNIV COLORADO-BOLDR	Cassen, P.	ARC	Zweibel, E.	NCA 2-170301	2101
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Conti, P. S.	NAG 5-78	2055
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Linsky, J. L.	NAG 5-82	2056
11	UNIV COLORADO-BOLDR	Early, L. J.	GSFC	Cash, W. C.	NAG 5-96	2057
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Shull, J. M.	NAG 5-193	2059
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Ayres, L. R.	NAG 5-199	2060
11	UNIV COLORADO-BOLDR	Early, L. J.	GSFC	Timothy, J. G.	NAG 5-211	2061
11	UNIV COLORADO-BOLDR	Boggess, A.	GSFC	Cash, W. C., Jr.	NAG 5-213	2063
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Brugal, E. W.	NAG 5-350	2064
11	UNIV COLORADO-BOLDR	Mead, J. M.	GSFC	Snow, T. P.	NAS 5-26409	2086
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Snow, T. P., Jr.	NSG 5300	2110
11	UNIV COLORADO-BOLDR	Early, L. J.	GSFC	Snow, T. P., Jr.	NSG 5303	2111
11	UNIV COLORADO-BOLDR	Stone, J. F.	MSFC	Ayres, T. R.	NAG 8-398	2065
11	UNIV COLORADO-BOLDR	Stone, J. F.	MSFC	Snow, T. P., Jr.	NAG 8-424	2066
11	UNIV COLORADO-BOLDR	Stone, J. F.	MSFC	Linsky, J.	NAG 8-439	2067

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11	UNIV COLORADO-BOLDR	Weiler, E. J.	HQ-EZ	Cash, W. C.	NAGW 203	2072
11	UNIV COLORADO-BOLDR	Weiler, E. J.	HQ-EZ	Timothy, J. G.	NASW 3569	2096
11	UNIV COLORADO-BOLDR	Kaluzienski, L.	HQ-EZ	McCray, R.	NSG 7128	2113
11	UNIV COLORADO-BOLDR	Weiler, E. J.	HQ-EZ	Timothy, J. G.	NSG 7459	2117
11	UNIV COLORADO-BOLDR	Weiler, E. J.	HQ-EZ	Snow, T. P.	NSG 7626	2120
11	UNIV COLORADO-BOLDR	Weiler, E. J.	HQ-EZ	Ashby, N.	NSG 7637	2121
11	UNIV OF DELAWARE	Kondo, Y.	GSFC	Shipman, H. L.	NAG 5-348	2169
11	UNIV OF DELAWARE	Stone, J. F.	MSFC	Shipman, H. L.	NAG 8-390	2170
11	UNIV OF DENVER	Goldberg, R. A.	GSFC	Barcus, J. R.	NAS 5-26627	2128
11	UNIV OF FLORIDA	Fimmel, R. O.	ARC	Weinberg, J. L.	NAS 2-11007	2290
11	UNIV OF FLORIDA	Volpe, F.	GSFC	Weinberg, J.	NAS 5-26383	2292
11	UNIV OF FLORIDA	Brunk, W. E.	HQ-EL	Carr, T. D.	NAGW 196	2286
11	UNIV OF FLORIDA	Brunk, W. E.	HQ-EL	Weinberg, J. L.	NASW 3578	2294
11	UNIV OF GEORGIA	Kondo, Y.	GSFC	Shaw, J. S.	NAG 5-280	2393
11	UNIV OF GEORGIA	Kondo, Y.	GSFC	Scott, J. S.	NAG 5-365	2395
11	UNIV OF HAWAII-MANOA	Goebel, J. H.	ARC	Capps, R. W.	NAG 2-165	2400
11	UNIV OF HAWAII-MANOA	Kondo, Y.	GSFC	Simon, T.	NAG 5-146	2401
11	UNIV OF HAWAII-MANOA	Hughes, W. E.	GSFC	Jefferies, J. T.	NAS 5-25181	2416
11	UNIV OF HAWAII-MANOA	Stone, J. F.	MSFC	Simon, T.	NAG 8-419	2402
11	UNIV OF HAWAII-MANOA	Stone, J. F.	MSFC	Henry, J. P.	NAG 8-436	2403
11	UNIV OF HAWAII-MANOA	Brunk, W. E.	HQ-EL	Cruikshank, D.	NAGW 65	2406
11	UNIV OF HAWAII-MANOA	Brunk, W. E.	HQ-EL	Jefferies, J. T.	NASW 3159	2419
11	UNIV OF HAWAII-MANOA	Brunk, W. E.	HQ-EL	Pilcher, C. B.	NASW 3460	2420
11	UNIV OF HAWAII-MANOA	Brunk, W. E.	HQ-EL	Jefferies, J. T.	NGF 12-001-103	2422
11	UNIV OF HAWAII-MANOA	Brunk, W. E.	HQ-EL	Jefferies, J. T.	NGL 12-001-057	2424
11	UNIV OF HAWAII-MANOA	Brunk, W. E.	HQ-EL	Jefferies, J. T.	NSG 7323	2427
11	UNIV OF HAWAII-MANOA	Brunk, W. E.	HQ-EL	McCord, T. B.	NGL 12-001-011	2423
11	UNIV OF HAWAII-MANOA	Chipman, E. G.	HQ-EZ	Jefferies, J. T.	NGL 12-001-011	2423
11	UNIV HOUSTON-CL LAKE	Fenner, R. G.	JSC	Dickerson, E. T.	NAS 9-16422	4631
11	UNIV ILLINOIS-URBANA	Kondo, Y.	GSFC	Kaler, J. B.	NAG 5-171	2530
11	UNIV ILLINOIS-URBANA	Kondo, Y.	GSFC	Gallagher, J. S.	NAG 5-362	2531
11	UNIV ILLINOIS-URBANA	Stone, J. F.	MSFC	Lamb, D. Q.	NAG 8-310	2532
11	UNIV ILLINOIS-URBANA	Stone, J. F.	MSFC	Dickel, J. R.	NAG 8-409	2533
11	UNIV ILLINOIS-URBANA	Brunk, W. E.	HQ-EL	Dickel, J. R.	NGR 14-005-176	2542
11	UNIV ILLINOIS-URBANA	Kaluzienski, L.	HQ-EZ	Lamb, D. Q.	NSG 7653	2551
11	UNIV OF IOWA	Wales, R. O.	GSFC	Calvert, W.	NAG 5-225	2662
11	UNIV OF IOWA	Wales, R. O.	GSFC	Frank, L. A.	NAG 5-295	2663
11	UNIV OF IOWA	Bullock, G.	GSFC	Gurnett, D. A.	NAS 5-11279	2671
11	UNIV OF IOWA	Bullock, G. D.	GSFC	Frank, L. A.	NAS 5-25689	2674
11	UNIV OF IOWA	Stone, R. G.	GSFC	Gurnett, D. A.	NAS 5-25999	2676
11	UNIV OF IOWA	Corrigan, J. P.	GSFC	Gurnett, D. A.	NAS 5-26125	2677
11	UNIV OF IOWA	Wales, R. O.	GSFC	Gurnett, D. A.	NAS 5-26819	2680
11	UNIV OF IOWA	O'brien, J. J.	GSFC	Frank, L. A.	NAS 5-26858	2683
11	UNIV OF IOWA	Quaide, W. L.	HQ-EL	Kurth, W. S.	NAGW 337	2667
11	UNIV OF KANSAS	Rosendhal, J. D.	HQ-E	Frost, V. S.	NAGW 381	2716
11	UNIV OF KENTUCKY	Kondo, Y.	GSFC	Ferland, G. J.	NAG 5-239	2758
11	UNIV MARYLAND-COL PK	Witteborn, F. C.	ARC	Wilkerson, T. D.	NCC 2-208	2933
11	UNIV MARYLAND-COL PK	Boggess, A.	GSFC	Wilson, A. S.	NAG 5-54	2866
11	UNIV MARYLAND-COL PK	Pearl, J. C.	GSFC	Khanna, R. K.	NAG 5-216	2875
11	UNIV MARYLAND-COL PK	Kondo, Y.	GSFC	Harrington, J. P.	NAG 5-247	2881
11	UNIV MARYLAND-COL PK	Kondo, Y.	GSFC	A'hearn, M. F.	NAG 5-252	2882
11	UNIV MARYLAND-COL PK	Kondo, Y.	GSFC	Ahearn, M. F.	NAG 5-279	2884
11	UNIV MARYLAND-COL PK	Ogilvie, K. W.	GSFC	Coplan, M. A.	NAS 5-25472	2904
11	UNIV MARYLAND-COL PK	Wales, R. O.	GSFC	Gloecker, G.	NAS 5-25735	2906
11	UNIV MARYLAND-COL PK	Ormes, J. F.	GSFC	Yodh, G. B.	NAS 5-26098	2908
11	UNIV MARYLAND-COL PK	Wales, R. O.	GSFC	Gloeckler, G.	NAS 5-26739	2915
11	UNIV MARYLAND-COL PK	Corrigan, J. P.	GSFC	Wu, C. S.	NSG 5408	2973
11	UNIV MARYLAND-COL PK	Jones, J. B.	MSFC	Wilson, A. S.	NAG 8-329	2891
11	UNIV MARYLAND-COL PK	Swearingen, J. C.	MSFC	Wilson, A. S.	NAG 8-349	2892
11	UNIV MARYLAND-COL PK	Stone, J. F.	MSFC	Wilson, A. S.	NAG 8-429	2893
11	UNIV MARYLAND-COL PK	Brunk, W. E.	HQ-EL	A'hearn, M. F.	NSG 7322	2976



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11	UNIV MARYLAND-COL PK	Kaluzienski, L. J.	HQ-EZ	Earl, J. A.	NGR 21-002-066	2938
11	UNIV MARYLAND-COL PK	Stencel, R. E.	HQ-EZ	Griem, H. R.	NGR 21-002-073	2939
11	UNIV MARYLAND-COL PK	Kaluzienski, L. J.	HQ-EZ	Gloeckler, G.	NGR 21-002-224	2942
11	UNIV MARYLAND-COL PK	Carter, C. H.	HQ-LB	Rose, W.	NGT 21-002-801	2948
11	UNIV MARYLAND-COL PK	Carter, C. H.	HQ-LB	Wentzel, D. G.	NGT 21-002-802	2949
11	UNIV MARYLAND-COL PK	Carter, C. H.	HQ-LB	Gloeckler, G.	NGT 21-002-804	2951
11	UNIV MARYLAND-COL PK	Carter, C. H.	HQ-LB	Sucher, J.	NGT 21-002-806	2953
11	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Wilson, A. S.	NGT 21-002-808	2955
11	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Amaty, R. R.	NGT 21-002-811	2958
11	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Gloeckler, G.	NGT 21-002-812	2959
11	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Matthews, T. A.	NGT 21-002-817	2964
11	UNIV OF MASS-AMHERST	Brunk, W. E.	HQ-EL	Irvine, W. M.	NGL 22-010-023	3229
11	UNIV MICH-ANN ARBOR	Fimmel, R.	ARC	Donahue, T. M.	NAS 2-9126	3302
11	UNIV MICH-ANN ARBOR	Fimmel, R.	ARC	Nagy, A. F.	NAS 2-9130	3303
11	UNIV MICH-ANN ARBOR	Corrigan, J. P.	GSFC	Atreya, S. K.	NAG 5-109	3287
11	UNIV MICH-ANN ARBOR	Kondo, Y.	GSFC	Cowley, A. P.	NAG 5-251	3289
11	UNIV MICH-ANN ARBOR	Kondo, Y.	GSFC	Kriss, G. A.	NAG 5-324	3290
11	UNIV MICH-ANN ARBOR	Bullock, G. D.	GSFC	Adams, D. F.	NAS 5-25038	3313
11	UNIV MICH-ANN ARBOR	Bullock, G.	GSFC	Carignan, G. R.	NAS 5-26069	3318
11	UNIV MICH-ANN ARBOR	Spencer, N.	GSFC	Carignan, G. R.	NAS 5-26840	3321
11	UNIV MICH-ANN ARBOR	Chappell, R.	MSFC	Sharp, W. E.	NAS 8-34910	3326
11	UNIV MICH-ANN ARBOR	Weiler, E. J.	HQ-EZ	Hiltner, W. A.	NGR 23-005-464	3337
11	U MINN-MNPLS-ST PAUL	Kondo, Y.	GSFC	Sitko, M. L.	NAG 5-190	3361
11	U MINN-MNPLS-ST PAUL	Kondo, Y.	GSFC	Humphreys, R. M.	NAG 5-191	3362
11	U MINN-MNPLS-ST PAUL	Bullock, G.	GSFC	Kellogg, P. J.	NAS 5-11310	3367
11	U MINN-MNPLS-ST PAUL	Sugiura, M.	GSFC	Cahill, L. J., Jr.	NAS 5-25389	3369
11	U MINN-MNPLS-ST PAUL	Klein, B.	GSFC	Kellogg, P. J.	NAS 5-25753	3370
11	U MINN-MNPLS-ST PAUL	Sing, M.	GSFC	Waddington, C. J.	NAS 5-26056	3371
11	U MINN-MNPLS-ST PAUL	Kondo, Y.	GSFC	Davidson, K.	NSG 5397	3382
11	U MINN-MNPLS-ST PAUL	Stone, J. F.	MSFC	Waddington, C. J.	NAS 8-27977	3372
11	U MINN-MNPLS-ST PAUL	Kaluzienski, L. J.	HQ-EZ	Waddington, C. J.	NGR 24-005-050	3377
11	U MINN-MNPLS-ST PAUL	Boggess, N. W.	HQ-EZ	Ney, E. P.	NSG 2014	3379
11	UNIV MO-ST LOUIS	Kondo, Y.	GSFC	Schwartz, R. D.	NAG 5-243	3429
11	UNIV NEBRASKA-LINCLN	Kondo, Y.	GSFC	Schmidt, E. G.	NAG 5-282	3466
11	UNIV NEBRASKA-LINCLN	Boggess, A.	GSFC	Schmidt, E. G.	NSG 5391	3472
11	UNIV NEW HAMP-DURHAM	Wales, R. O.	GSFC	Smith, C.	NAG 5-228	3492
11	UNIV NEW HAMP-DURHAM	Underwood, C.	GSFC	Chupp, E. L.	NAS 5-23761	3500
11	UNIV NEW HAMP-DURHAM	Davis, M. A.	GSFC	Lockwood, J. A.	NAS 5-26645	3502
11	UNIV NEW HAMP-DURHAM	Quaide, W. L.	HQ-EL	Webber, W. R.	NAGW 371	3498
11	UNIV NEW HAMP-DURHAM	Kaluzienski, L. J.	HQ-EZ	Chupp, E. L.	NGL 30-002-021	3506
11	UNIV NEW HAMP-DURHAM	Kaluzienski, L. J.	HQ-EZ	Webber, W. R.	NGR 30-002-052	3507
11	UNIV NEW HAMP-DURHAM	Kaluzienski, L. J.	HQ-EZ	Lockwood, J. A.	NSG 7481	3509
11	UNIV OF NEW MEXICO	Stone, J. F.	MSFC	Burns, J. O.	NAG 8-386	3598
11	UNIV OF NEW MEXICO	Stone, J. F.	MSFC	Burns, J. O.	NAG 8-444	3599
11	UNIV N CAR-CHPL HILL	Owens, F. C.	HQ-LB	Christiansen, W. A.	NGT 34-003-801	3921
11	UNIV OKLAHOMA-NORMAN	Stone, J. F.	MSFC	Chincarini, G.	NAG 8-372	4200
11	UNIV OREGON-EUGENE	Caroff, L. J.	ARC	Nolt, I. G.	NCA 2-587201	4227
11	UNIV OF PACIFIC	Acllenbach, D.	ARC	Takahashi, T.	NCA 2-588301	1964
11	UNIV OF PITTSBURGH	Black, D. C.	ARC	Gatewood, G. D.	NAG 2-53	4359
11	UNIV OF PITTSBURGH	Kondo, Y.	GSFC	Turnshek, D. A.	NAG 5-249	4362
11	UNIV OF PITTSBURGH	Boyce, J. M.	HQ-EL	Hapke, B.	NSG 7147	4375
11	UNIV OF PITTSBURGH	Stenal, R. E.	HQ-EZ	Biondi, M. A.	NGR 39-011-137	4372
11	UNIV OF ROCHESTER	Goebel, J. H.	ARC	Forrest, W. J.	NAG 2-117	3865
11	UNIV OF ROCHESTER	Haughney, L. C.	ARC	Pipher, J. L.	NSG 2343	3869
11	UNIV OF ROCHESTER	Kondo, Y.	GSFC	Helfer, H. L.	NAG 5-46	3867
11	UNIV OF SOUTHERN CAL	Pollack, J. B.	ARC	Kumar, S.	NCA 2-730101	2017
11	UNIV OF SOUTHERN CAL	Corrigan, J. P.	GSFC	Peters, G.	NAG 5-126	2001
11	UNIV OF SOUTHERN CAL	Kondo, Y.	GSFC	Peters, G. J.	NSG 5422	2021
11	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Broadfoot, A. L.	NAGW 62	2005
11	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Shemansky, D. E.	NAGW 106	2006

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11	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Kumar, S.	NAGW 315	2011
11	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Shemansky, D. E.	NAGW 316	2012
11	UNIV OF SOUTHERN CAL	Weiler, E. J.	HQ-EZ	Barry, P.	NAGW 147	2008
11	UNIV TENNESSEE-KNOXV	Dietrich, J. W.	JSC	Hunter, R. H.	NGL 43-001-140	4454
11	UNIV TEXAS-AUSTIN	Haughney, L. C.	ARC	Harvey, P. M.	NAG 2-67	4636
11	UNIV TEXAS-AUSTIN	Haughney, L. C.	ARC	Evans, N. J.	NAG 2-133	4637
11	UNIV TEXAS-AUSTIN	Haughney, L. C.	ARC	Evans, N. J.	NAG 2-199	4639
11	UNIV TEXAS-AUSTIN	Haughney, L. C.	ARC	Evans, N. J.	NAG 2-253	4640
11	UNIV TEXAS-AUSTIN	Haughney, L. C.	ARC	Evans, N. J.	NCA 2-781201	4672
11	UNIV TEXAS-AUSTIN	Werner, M. W.	ARC	Shields, G.	NAG 5-80	4646
11	UNIV TEXAS-AUSTIN	Kondo, Y.	GSFC	Parsons, S. B.	NAG 5-258	4647
11	UNIV TEXAS-AUSTIN	Kondo, Y.	GSFC	Wills, B. J.	NAS 5-25656	4654
11	UNIV TEXAS-AUSTIN	Vitagliano, H. D.	GSFC	Trafton, L. M.	NAS 5-25948	4655
11	UNIV TEXAS-AUSTIN	Hughes, W. E.	GSFC	Shelus, P. J.	NSG 5379	4680
11	UNIV TEXAS-AUSTIN	Kondo, Y.	GSFC	Lambert, D. L.	NAS 8-32905	4660
11	UNIV TEXAS-AUSTIN	O'dell, C. R.	MSFC	Lambert, D. L.	NAS 8-32906	4661
11	UNIV TEXAS-AUSTIN	Humphreys, J. T.	MSFC	Jefferys, W. H.	NGR 44-012-152	4674
11	UNIV TEXAS-AUSTIN	Brunk, W. E.	HQ-EL	Smith, H. J.	NAGW 233	4650
11	UNIV TEXAS-AUSTIN	Weiler, E. J.	HQ-EZ	Duncombe, R. L.	NAGW 390	4652
11	UNIV TEXAS-AUSTIN	Kaluzienski, L. J.	HQ-EZ	Unavailable	NGT 44-012-802	4677
11	UNIV TEXAS-AUSTIN	Owens, F. C.	HQ-LB	Bash, F. N.	NAG 5-226	4690
11	UNIV TEXAS-DALLAS	Wales, R. O.	GSFC	Heikkila, W. J.	NAS 8-35011	4708
11	UNIV TEXAS-DALLAS	Chappell, R.	MSFC	Higlis, R. A.	NASW 3576	4709
11	UNIV TEXAS-DALLAS	Brunk, W. E.	HQ-EL	Hoffman, J. H.	NAG 5-167	4169
11	UNIV OF TOLEDO	Kondo, Y.	GSFC	Witt, W. N.	NAG 5-253	4170
11	UNIV OF TOLEDO	Kondo, Y.	GSFC	Morrison, N. D.	NAG 5-254	4171
11	UNIV OF TOLEDO	Kondo, Y.	GSFC	Bopp, B. W.	NSG 5359	4178
11	UNIV OF TOLEDO	Boggess, A.	GSFC	Morrison, N. D.	NAGW 89	4172
11	UNIV OF TOLEDO	Stencel, R. E.	HQ-EZ	Witt, A. N.	NAGW 229	4173
11	UNIV OF TOLEDO	Weiler, E. J.	HQ-EZ	Bopp, B. W.	NAGW 416	4752
11	UNIV OF TOLEDO	Brunk, W. E.	HQ-EL	Shorthill, R. W.	NAG 5-61	4905
11	UNIV OF UTAH	Kondo, Y.	GSFC	Thuan, T. X.	NAG 5-256	4907
11	UNIV OF VIRGINIA	Kondo, Y.	GSFC	O'connell, R. W.	NAG 5-257	4908
11	UNIV OF VIRGINIA	Kondo, Y.	GSFC	Thuan, T. X.	NAS 5-26110	4917
11	UNIV OF VIRGINIA	Stecher, T. P.	GSFC	O'connell, R. W.	NAS 5-26476	4919
11	UNIV OF VIRGINIA	Cyphers, H. D.	GSFC	O'connell, R. W.	NAG 8-375	4910
11	UNIV OF VIRGINIA	Stone, J. F.	MSFC	Thuan, T. X.	NAS 8-33327	4920
11	UNIV OF VIRGINIA	Jones, J. B., Jr.	MSFC	Thuan, T. X.	NAG 5-45	5037
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Bohm, K. H.	NAG 5-207	5038
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Hodge, P. W.	NAG 5-342	5040
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Margon, B.	NAG 5-357	5042
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Brown, D.	NSG 5374	5076
11	UNIV OF WASHINGTON	Boggess, A.	GSFC	Wallerstein, G.	NSG 5395	5077
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Szkody, P.	NSG 5398	5078
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Bohm-vitense, E.	NAG 8-359	5046
11	UNIV OF WASHINGTON	Swearingen, J. C.	MSFC	Sullivan, W. T.	NAG 8-366	5047
11	UNIV OF WASHINGTON	Stone, J. F.	MSFC	Boynton, P. E.	NAG 8-378	5048
11	UNIV OF WASHINGTON	Stone, J. F.	MSFC	Bohm-vitense, E.	NAG 8-399	5049
11	UNIV OF WASHINGTON	Stone, J. F.	MSFC	Wallerstein, G.	NAG 8-405	5050
11	UNIV OF WASHINGTON	Stone, J. F.	MSFC	Balick, B.	NAG 8-411	5051
11	UNIV OF WASHINGTON	Stone, J. F.	MSFC	Bohm-vitense, E.	NAG 8-433	5052
11	UNIV OF WASHINGTON	Stone, J. F.	MSFC	Margon, B. H.	NAS 2-11615	5133
11	UNIV WISC-MADISON	Boese, R. W.	ARC	Sromovsky, L. A.	NAG 5-186	5117
11	UNIV WISC-MADISON	Kondo, Y.	GSFC	Savage, B. D.	NAG 5-353	5121
11	UNIV WISC-MADISON	Kondo, Y.	GSFC	Anderson, C. M.	NAS 5-24487	5136
11	UNIV WISC-MADISON	Sours, W.	GSFC	Bliss, R.	NAS 5-25487	5137
11	UNIV WISC-MADISON	Fellerman, K.	GSFC	Code, A. D.	NAS 5-25714	5138
11	UNIV WISC-MADISON	Vitagliano, H. D.	GSFC	Savage, B. C.	NAS 5-26055	5140
11	UNIV WISC-MADISON	Young, E.	GSFC	Code, A. D.	NAS 5-26078	5141
11	UNIV WISC-MADISON	Sing, M. L.	GSFC	Kraushaer, W. L.	NGL 50-002-013	5155
11	UNIV WISC-MADISON	Early, L. J.	GSFC	Code, A. D.		

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11	UNIV WISC-MADISON	Early, L. J.	GSFC	Kraushaar, W. L.	NGL 50-002-044	5156
11	UNIV WISC-MADISON	Stone, J. F.	MSFC	Sanders, W. T.	NAG 8-401	5122
11	UNIV WISC-MADISON	Stone, J. F.	MSFC	Cassinelli, J. P.	NAG 8-410	5123
11	UNIV WISC-MADISON	Stone, J. F.	MSFC	McCammon, D.	NAG 8-431	5124
11	UNIV WISC-MADISON	Owens, J.	MSFC	Code, A. D.	NAS 5-26777	5145
11	UNIV WISC-MADISON	Rosendhal, J. D.	HQ-E	Weinman, J. A.	NAGW 380	5128
11	UNIV WISC-MADISON	Stencel, R. E.	HQ-EZ	Cassinelli, J. P.	NAGW 283	5126
11	UNIV WISC-MADISON	Stencel, R. E.	HQ-EZ	Cassinelli, J. P.	NAGW 422	5130
11	UNIV WISC-MADISON	Weiler, E. J.	HQ-EZ	Cab, A. D.	NAGW 435	5131
11	UNIV OF WYOMING	Haughney, L. C.	ARC	Thronson, H. A., Jr.	NAG 2-134	5171
11	UNIV OF WYOMING	Haughney, L. C.	ARC	Smith, J.	NAG 2-252	5172
11	UTAH STATE UNIV	Chappell, C. R.	MSFC	Raitt, W. J.	NAG 8-17	4762
11	UTAH STATE UNIV	Devincenzi, D. L.	HQ-EB	Smith, G. G.	NSG 7038	4776
11	VANDERBILT UNIVERSITY	Kondo, Y.	GSFC	Eaton, J. A.	NAG 5-176	4465
11	VANDERBILT UNIVERSITY	Roman, N. G.	HQ-EZ	Hall, D.	NSG 7463	4473
11	VANDERBILT UNIVERSITY	Weiler, E. J.	HQ-EZ	Hall, D.	NSG 7543	4474
11	VILLANOVA UNIVERSITY	Boggess, A.	GSFC	Guinan, E. F.	NAG 5-205	4377
11	VILLANOVA UNIVERSITY	Kondo, Y.	GSFC	Sion, E. M.	NAG 5-260	4378
11	VILLANOVA UNIVERSITY	Kondo, Y.	GSFC	Sion, E. M.	NAG 5-343	4379
11	VIRGINIA POLY INST	Jones, J. B.	MSFC	Odell, S. L.	NAG 8-314	4989
11	VIRGINIA POLY INST	Stone, J. F.	MSFC	O'dell, S. L.	NAG 8-348	4990
11	VIRGINIA POLY INST	Stone, J. F.	MSFC	Becker, R.	NAG 8-432	4991
11	WASHINGTON UNIVERSTY	Theis, R. F.	GSFC	Arvidson, R. E.	NAS 5-27649	3446
11	WASHINGTON UNIVERSTY	Stone, J. F.	MSFC	Margolis, S. H.	NAG 8-448	3433
11	WASHINGTON UNIVERSTY	Johnson, W. G.	MSFC	Israel, M. H.	NAS 8-27976	3447
11	WASHINGTON UNIVERSTY	Brunk, W. E.	HQ-EL	Smith, W. H.	NSG 7334	3453
11	WASHINGTON UNIVERSTY	Kaluzienski, L. J.	HQ-EZ	Klarman, J.	NGR 26-008-001	3450
11	WASHINGTON UNIVERSTY	Weiler, E. J.	HQ-EZ	Smith, W. H.	NSG 7372	3454
11	WESLEYAN UNIVERSITY	Odell, C. R.	MSFC	Herbst, W.	NAG 8-335	2148
11	WESTERN CONN STATE U	Kondo, Y.	GSFC	Zolcinski, M.	NAG 5-329	2150
11	WESTRN KENTUCKY UNIV	Boggess, A.	GSFC	Hackney, K. R.	NSG 5238	2772
11	WHEATON COLLEGE	Kondo, Y.	GSFC	Barker, T.	NSG 5376	3236
11	WOODSHOLE OCEAN INST	Quaide, W. L.	HQ-EL	Bowin, C. O.	NASW 3770	3246
11	WORCESTER POLY INST	Vardaman, W. K.	MSFC	Austin, R. J.	NAG 8-447	3248
11	YALE UNIVERSITY	Boggess, A.	GSFC	Oemler, A.	NAG 5-188	2154
11	YALE UNIVERSITY	Kondo, Y.	GSFC	Zinn, H.	NAG 5-330	2155
12	ALABAMA A&M UNIV	Frazier, D. O.	MSFC	Chang, K.	NAG 8-21	1001
12	ARIZONA STATE UNIV	Des Marais, D. J.	ARC	Yuen, G.	NCA 2-35401	1106
12	ARIZONA STATE UNIV	Carter, C. H.	HQ-LB	Moore, C. B.	NGT 03-001-800	1111
12	BOWIE STATE COLLEGE	Rodriguez, G. E.	GSFC	Rock, M.	NSG 5009	2805
12	CALIF INST OF TECH	Dietrich, J. W.	JSC	Epstein, S.	NAG 9-46	1262
12	CALIF INST OF TECH	Dietrich, J. W.	JSC	Wasserburg, G. J.	NGL 05-002-188	1299
12	CALIF INST OF TECH	Devincenzi, D. L.	HQ-EB	Yung, Y. L.	NAGW 254	1273
12	CASE WESTERN RESERVE	Seng, G. T.	LERC	Claspy, P. C.	NAG 3-98	3940
12	CASE WESTERN RESERVE	Lauver, R. W.	LERC	Ritchey, W. M.	NAG 3-158	3943
12	CASE WESTERN RESERVE	Serafini, T. T.	LERC	Ritchey, W. M.	NAG 3-163	3944
12	CASE WESTERN RESERVE	Reid, M. A.	LERC	Yeager, E. B.	NAG 3-219	3950
12	CASE WESTERN RESERVE	Abbey, K. M.	LERC	Litt, M. H.	NAG 3-234	3955
12	CASE WESTERN RESERVE	Purvis, C. K.	LERC	Gordon, W. L.	NAG 3-235	3956
12	CASE WESTERN RESERVE	Kohl, F. J.	LERC	Anderson, A. B.	NAG 3-341	3973
12	CATHOLIC UNIVERSITY	Nava, D. F.	GSFC	Hunt, J. B.	NSG 5173	2183
12	CHRISTPHR NEWPRT COL	Rhinehart, R. P.	LARC	Sacks, L. J.	NAG 1-268	4782
12	CLARK COLLEGE	Whitten, R. C.	ARC	Veluri, V. R.	NSG 2143	2333
12	CLARKSON COL OF TECH	Schmidt, H.	LERC	Jellinek, H. H.	NAG 3-145	3627
12	COLLEGE OF WM & MARY	Stclair, T. L.	LARC	Orwoll, R. A.	NAG 1-144	4786
12	COLLEGE OF WM & MARY	Freeman, W. T., Jr.	LARC	Kranbuehl, D. E.	NAG 1-237	4788
12	COLLEGE OF WM & MARY	Johnston, N. J.	LARC	Kranbuehl, D. E.	NSG 1095	4799
12	COLORADO SCH OF MINE	Bittker, D. A.	LERC	Daniel, S. R.	NAG 3-197	2026
12	CORNELL UNIVERSITY	Devincenzi, D. L.	HQ-EB	Usher, D. A.	NAGW 493	3688
12	CORNELL UNIVERSITY	Devincenzi, D. L.	HQ-EB	Sagan, C. E.	NGR 33-010-101	3699

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12	DREXEL UNIVERSITY	Holland, A. C.	GSFC	Thornton, D. C.	NAG 5-620	4258
12	DREXEL UNIVERSITY	Torres, A. L.	GSFC	Thornton, D. C.	NSG 6035	4269
12	DREXEL UNIVERSITY	Bittker, D. A.	LERC	Cohen, R. S.	NAG 3-183	4255
12	FLORIDA INST OF TECH	Howard, F. S.	KSC	Thomas, J. J.	NAS10-10106	2258
12	GEORGE MASON UNIV	Moe, K. L.	GSFC	Mitchell, C. M.	NAS 5-26952	4804
12	GEORGIA INST OF TECH	MacElroy, R. D.	ARC	Carden, J. L.	NCA 2-260102	2377
12	HARVARD UNIVERSITY	Fallon, R. A.	MSFC	Turnbull, D.	NAS 8-32691	3027
12	HARVARD UNIVERSITY	Devincenzi, D. L.	HQ-EB	Yung, Y. L.	NAGW 395	3018
12	HOWARD UNIVERSITY	Dickens, P. L.	GSFC	Nicholson, J. M.	NAG 5-204	2230
12	INDIANA U-BLOOMINGTN	Devincenzi, D. L.	HQ-EB	Hayes, J. M.	NGR 15-003-118	2563
12	INDIANA U-BLOOMINGTN	Owens, F. C.	HQ-LB	Langhoff, P. W.	NGT 15-003-800	2564
12	JOHNS HOPKINS UNIV	Owens, F. C.	HQ-LB	Robinson, D. W.	NGT 21-001-801	2840
12	LEHIGH UNIVERSITY	Warner, J. L.	JSC	Goldstein, J. I.	NGR 39-007-056	4280
12	LONGWOOD COLLEGE	Bell, V. L.	ARC	Barber, P. G.	NAG 1-357	4818
12	LOUISIANA TECH UNIV	Byvik, C. E.	LARC	Miles, A. M.	NAG 1-162	2786
12	MASS INST OF TECH	Brabbs, T. A.	LERC	Hoult, D. P.	NCC 3-15	3166
12	MASS INST OF TECH	Antoine, A. C.	LERC	Uhlmann, D. R.	NSG 3286	3197
12	MASS INST OF TECH	Devincenzi, D. L.	HQ-EB	Prinn, D. G.	NAGW 114	3117
12	MASS INST OF TECH	Devincenzi, D. L.	HQ-EB	Rich, A.	NGR 22-009-277	3175
12	MICHIGAN STATE UNIV	Seng, G. T.	LERC	Crouch, S. R.	NAG 3-93	3256
12	MICHIGAN STATE UNIV	Seng, G. T.	LERC	Enke, C. G.	NAG 3-107	3257
12	MICHIGAN TECH UNIV	Dreshfield, R. L.	LERC	Heckel, R. W.	NAG 3-216	3271
12	MISS UNIV FOR WOMEN	StClair, T. L.	LARC	Pratt, J. R.	NSG 1539	3403
12	MUSKINGUM COLLEGE	Charleston, L. J.	LERC	Wallace, W. J.	NAG 3-79	4059
12	OHIO STATE UNIV	Langhoff, S. R.	ARC	Shavitt, I.	NAG 2-163	4065
12	OHIO STATE UNIV	Dressler, R. F.	HQ-EM	Stroud, D. G.	NASW 3601	4086
12	OLD DOMINION UNIV	Phillips, D. H.	LARC	Ake, R. L.	NSG 1393	4878
12	PENN STATE U-UNIV PK	Pollack, J. B.	ARC	Castleman, W. A., Jr.	NAG 2-176	4289
12	POLY INST OF NY	Parker, J. A.	ARC	Pearce, E. M.	NAG 2-225	3744
12	POLY INST OF NY	Golub, M. A.	ARC	Pearce, E. M.	NAG 2-229	3745
12	POLY INST OF NY	Devincenzi, D. L.	HQ-EB	Eirich, F. R.	NGR 33-006-070	3748
12	PRINCETON UNIVERSITY	Brabbs, T. A.	LERC	Glassman, I.	NAG 3-310	3523
12	PURDUE UNIVERSITY	Dietrich, J. W.	JSC	Lipschutz, M. E.	NAG 9-48	2598
12	PURDUE UNIVERSITY	Lezberg, E. A.	LERC	Laurendeau, N. M.	NAG 3-360	2588
12	RENSSELAER POLY-NY	Seng, G. T.	GSFC	Lauer, J. L.	NAG 3-205	3761
12	RENSSELAER POLY-NY	Sheibley, D. W.	LERC	Moore, J. A.	NAG 3-199	3759
12	RENSSELAER POLY-NY	Devincenzi, D. L.	HQ-EB	Ferris, J. P.	NGR 33-018-148	3772
12	ROCKEFELLER UNIV	MacElroy, R. D.	ARC	Loew, G.	NCC 2-196	3779
12	SAN FRAN STATE UNIV	Lawless, J. B.	ARC	Orenberg, J. B.	NCA 2-660102	1370
12	SAN FRAN STATE UNIV	Devincenzi, D. L.	HQ-EB	Orenberg, J. B.	NAGW 94	1368
12	SAN FRAN STATE UNIV	Devincenzi, D. L.	HQ-EB	Orenberg, J. B.	NAGW 324	1369
12	SAN FRAN STATE UNIV	Devincenzi, D. L.	HQ-EB	Orenberg, J. B.	NSG 7512	1378
12	SAN JOSE STATE UNIV	Miquel, J.	ARC	Yengoyan, L. S.	NCA 2-675004	1385
12	SAN JOSE STATE UNIV	Wydeven, T.	ARC	Spitze, L. A.	NCA 2-675204	1391
12	SAN JOSE STATE UNIV	Gilwee, W.	ARC	Kellman, R.	NCA 2-675304	1395
12	SAN JOSE STATE UNIV	Cagliostro, D. E.	ARC	Ballard, R. C.	NCC 2-4	1398
12	SAN JOSE STATE UNIV	Wydeven, T.	ARC	Spitze, L. A.	NCC 2-8	1399
12	SAN JOSE STATE UNIV	Parker, J. A.	ARC	Hsu, M. T.	NCC 2-28	1401
12	SAN JOSE STATE UNIV	Wydeven, T.	ARC	Spitze, L. A.	NCC 2-53	1405
12	SAN JOSE STATE UNIV	Kourtides, D. A.	ARC	Ling, A. C.	NCC 2-56	1406
12	SAN JOSE STATE UNIV	Chang, S.	ARC	Coyne, L. M.	NCC 2-153	1419
12	SAN JOSE STATE UNIV	Wydeven, T. J.	ARC	Spitze, L. A.	NCC 2-221	1431
12	SAN JOSE STATE UNIV	Wydeven, T. J.	ARC	Spitze, L. A.	NCC 2-246	1434
12	SAN JOSE STATE UNIV	Wydeven, T. J.	ARC	Spitze, L. A.	NCC 2-261	1436
12	SO ILL UNIV-CARBONDL	Carle, G. C.	ARC	Phillips, J.	NCA 2-735201	2467
12	SO ILL UNIV-CARBONDL	Carter, C. H.	HQ-LB	Phillips, J. B.	NGT 14-018-800	2469
12	SOUTHERN UNIV-SHRVPT	Byvik, C. E.	LARC	Miles, A. M.	NAG 1-356	2792
12	SPRING ARBOR COL	Charleson, J. A.	LERC	Johnson, D. A.	NAG 3-148	3277
12	STANFORD UNIVERSITY	Desmarais, D. J.	ARC	Bonner, W. A.	NCA 2-745103	1516
12	STANFORD UNIVERSITY	Desmarais, D. J.	ARC	Bonner, W. A.	NCA 2-745202	1521

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
12	STANFORD UNIVERSITY	Desmarais, D. J.	ARC	Bonner, W.	NCA 2-745303	1529
12	STANFORD UNIVERSITY	Carter, C. H.	HQ-LB	Zare, R. N.	NGT 05-020-800	1592
12	STATE UNIV NY-ALBANY	Jones, J. J.	LARC	Saturno, A. F.	NAG 1-323	3781
12	STATE U NY-STONY BRK	Kunde, V. G.	GSFC	Caldwell, J. J.	NAG 5-285	3823
12	STATE U NY-STONY BRK	Brabbs, T. A.	LERC	Yang, C. H.	NCC 3-2	3838
12	TEXAS A&M UNIVERSITY	Gibson, E. K.	JSC	Young, V.	NAS 9-16185	4573
12	TUSKEGEE INSTITUTE	Bryan, C. J.	KSC	Dillon, I. G.	NAG10-6	1018
12	TUSKEGEE INSTITUTE	Bryan, C. J.	KSC	Dillon, I. G.	NAG10-8	1019
12	UNIV ALA-BIRMINGHAM	Devincenzi, D. L.	HQ-EB	Lacey, J. C., Jr.	NGR 01-010-001	1025
12	UNIV ALA-HUNTSVILLE	Urban, E. W.	MSFC	Hendricks, J. B.	NAS 8-33384	1032
12	UNIV ALA-HUNTSVILLE	Fogle, V.	MSFC	Harris, J. M.	NAS 8-33978	1043
12	UNIV OF ARIZONA	Dietrich, J. W.	JSC	Boynton, W. V.	NAG 9-37	1148
12	UNIV OF ARIZONA	Dietrich, J. W.	JSC	Wilkening, L. L.	NAG 9-38	1149
12	UNIV OF ARIZONA	Dietrich, J. W.	JSC	Drake, M. J.	NAG 9-39	1150
12	UNIV CALIF-BERKELEY	Devincenzi, D. L.	HQ-EB	Jukes, J. H.	NGR 05-003-460	1685
12	UNIV CALIF-L ANGELES	Arnold, J. O.	ARC	Heller, E. J.	NCC 2-156	1783
12	UNIV CALIF-L ANGELES	Dietrich, J. W.	JSC	Kerridge, J. F.	NAG 9-27	1755
12	UNIV CALIF-L ANGELES	Dietrich, J. W.	JSC	Wasson, J. T.	NGL 05-007-367	1787
12	UNIV CALIF-L ANGELES	Geib, D.	HQ-EB	Kerridge, J. F.	NAGW 347	1765
12	UNIV CALIF-SAN DIEGO	Langhoff, S. R.	ARC	Wilson, K. R.	NAG 2-249	1816
12	UNIV CALIF-SAN DIEGO	Dietrich, J. W.	JSC	Arnold, J. R.	NAG 9-33	1831
12	UNIV CALIF-SAN DIEGO	Dietrich, J. W.	JSC	Marti, K.	NAG 9-41	1832
12	UNIV CALIF-SAN DIEGO	Dietrich, J. W.	JSC	Arnold, J. R.	NGL 05-009-148	1873
12	UNIV CALIF-SAN DIEGO	Dietrich, J. W.	JSC	Marti, K.	NGL 05-009-150	1874
12	UNIV OF CHICAGO	Kondo, Y.	GSFC	York, D. G.	NAG 5-286	2474
12	UNIV OF CHICAGO	Dietrich, J. W.	JSC	Clayton, R. N.	NGL 14-001-169	2500
12	UNIV COLORADO-BOLDR	Pollock, G. E.	ARC	Sievers, R. E.	NCA 2-170201	2099
12	UNIV OF DAYTON	Harwell, R. J.	MSFC	Salzer, I. O.	NAS 8-34544	4155
12	UNIV OF HAWAII-MANOA	Geib, D. S.	HQ-EB	Folsome, C. E.	NGR 12-001-109	2425
12	UNIV ILLINOIS-URBANA	Devincenzi, D. L.	HQ-EB	Woese, C. R.	NSG 7044	2549
12	UNIV OF IOWA	Renz, D. D.	LERC	Stawley, W. C.	NAG 3-236	2659
12	UNIV MARYLAND-COL PK	Hochstein, L. I.	ARC	Ponnamperuma, C.	NCA 2-420201	2929
12	UNIV MARYLAND-COL PK	Gentry, B. M.	GSFC	Wilkerson, T. D.	NAG 5-222	2876
12	UNIV MARYLAND-COL PK	Lee, S. Y.	GSFC	Freeman, D. H.	NAS 5-27657	2922
12	UNIV MARYLAND-COL PK	Donn, B. D.	GSFC	Khanna, R. K.	NSG 5172	2969
12	UNIV MARYLAND-COL PK	Seng, G. T.	LERC	Adler, I.	NAG 3-192	2862
12	UNIV MARYLAND-COL PK	Bredt, J. H.	HQ-EB	Ponnamparuma, C.	NAGW 219	2897
12	UNIV MARYLAND-COL PK	Devincenzi, D. L.	HQ-EB	Ponnamperuma, C.	NAGW 226	2898
12	UNIV MARYLAND-COL PK	Geib, D. S.	HQ-EB	Ponnamperuma, C.	NAGW 293	2899
12	UNIV MARYLAND-COL PK	Devincenzi, D. L.	HQ-EB	Ponnamperuma, C. A.	NGR 21-002-317	2945
12	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Adler, I.	NGT 21-002-807	2954
12	UNIV MD-EASTRN SHORE	Torres, A. L.	GSFC	Hung, Y. W.	NAG 5-608	2979
12	UNIV OF MASS-AMHERST	Devincenzi, D. L.	HQ-EB	Huguenin, R. L.	NSG 7397	3232
12	UNIV OF MIAMI	Devincenzi, D. L.	HQ-EB	Fox, S. W.	NGR 10-007-008	2323
12	UNIV MICH-ANN ARBOR	Daunton, N.	ARC	Anderson, D. J.	NAG 2-185	3281
12	UNIV MICH-ANN ARBOR	Devincenzi, D. L.	HQ-EB	Walker, J. C.	NAGW 176	3296
12	UNIV MICH-ANN ARBOR	Geib, D. S.	HQ-EB	Kuhn, W. R.	NSG 7308	3342
12	UNIV MO-ROLLA	Sutton, K.	LARC	Biolsi, L.	NAG 1-380	3418
12	UNIV MO-ROLLA	Jones, J. J.	LARC	Biolsi, L.	NSG 1369	3427
12	UNIV OF NEW MEXICO	Dietrich, J. W.	JSC	Keil, K.	NGL 32-004-063	3602
12	UNIV OF NOTRE DAME	Jaffe, R. L.	ARC	Huo, W. M.	NCC 2-147	2626
12	UNIV OF PENNSYLVANIA	Banks, B. A.	LERC	Forsman, W. C.	NAG 3-435	4351
12	UNIV OF PITTSBURGH	Watson, R. T.	HQ-EE	Kaufman, F.	NGR 39-011-161	4373
12	UNIV OF SANTA CLARA	Altman, R. L.	ARC	Saad, M. A.	NCA 2-685302	1985
12	UNIV OF SANTA CLARA	Chang, S.	ARC	White, D. H.	NCC 2-166	1994
12	UNIV OF SANTA CLARA	Lawless, J. G.	ARC	Sweeney, M.	NCC 2-170	1995
12	UNIV OF SOUTHERN CAL	Langhoff, S. R.	ARC	Segal, G. A.	NAG 2-77	1999
12	UNIV OF UTAH	Seng, G. T.	LERC	Ursenbach, W. O.	NAG 3-27	4744
12	UNIV OF WYOMING	Gilwee, W. J.	ARC	Adams, D. F.	NAS 2-11612	5179
12	UTAH STATE UNIV	Lynch, J. T.	HQ-EE	Torr, D. G.	NAGW 406	4768

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12	VANDERBILT UNIVERSITY	Johnston, M. H.	MSFC	Lichter, B. D.	NAS 8-34428	4468
12	VIRGINIA COMMONWEALTH U	Hergenrother, P. M.	LARC	Bass, R. G.	NAG 1-239	4926
12	VIRGINIA POLY INST	Progar, D. J.	LARC	Wightman, J. P.	NAG 1-127	4939
12	VIRGINIA POLY INST	Young, P. R.	LARC	McNair, H. M.	NAG 1-246	4957
12	VIRGINIA POLY INST	Sykes, G. F.	LARC	McGrath, J. E.	NCC 1-63	5002
12	VIRGINIA POLY INST	Young, P. R.	LARC	Mason, J. G.	NSG 1085	5012
12	VIRGINIA POLY INST	St Clair, A. K.	LARC	Taylor, L. T.	NSG 1428	5016
12	VIRGINIA POLY INST	St Clair, T. L.	LARC	Wolfe, J. F.	NSG 1524	5017
12	WAKE FOREST UNIV	Phillips, D. H.	LARC	Jackels, C. F.	NCC 1-55	3924
12	WESTERN WASHINGTON U	Boese, R. W.	ARC	Wilson, H. M.	NCA 2-862101	5093
12	WESTERN WASHINGTON U	Chackerian, C. C., Jr.	ARC	Wilson, H. W.	NCA 2-862201	5094
12	WRIGHT STATE UNIV	Hergenrother, P. M.	LARC	Harris, F. W.	NAG 1-255	4180
12	YALE UNIVERSITY	Kohl, F. J.	LERC	Rosner, D. E.	NSG 3169	2162
12	YALE UNIVERSITY	Devincenzi, D. L.	HQ-EB	Morowitz, H. J.	NAGW 251	2157
12	YALE UNIVERSITY	Carter, C. H.	HQ-LB	Williams, A. C.	NGT 01-001-800	1005
13	ALABAMA A&M UNIV	Owens, F. C.	HQ-LB	George, M. C.	NGT 01-001-801	1006
13	ALABAMA A&M UNIV	Weinberg, I.	LERC	Wang, E. Y.	NAG 3-139	1087
13	ARIZONA STATE UNIV	Mantenieks, M. A.	LERC	Parsons, M. L.	NAG 3-252	1089
13	ARIZONA STATE UNIV	Owens, F. C.	HQ-LB	Moore, C. B.	NGT 03-001-801	1112
13	ARIZONA STATE UNIV	Meador, W. E.	LARC	Martin, B. J.	NAG 1-411	2329
13	ATLANTA UNIVERSITY	Caruso, A. J.	GSFC	Bhatia, M. S.	NGR 21-027-010	2803
13	BOWIE STATE COLLEGE	Fimmel, R. O.	ARC	Jones, D. E.	NAS 2-7358	4740
13	BRIGHAM YOUNG UNIV	Townsend, L. W.	LARC	Franco, V.	NAG 1-418	3608
13	BROOKLYN COLLEGE	Norum, T. D.	LARC	Liu, J. T.	NAG 1-379	4383
13	BROWN UNIVERSITY	Wales, R. O.	GSFC	Stone, E. C.	NAS 5-20721	1280
13	CALIF INST OF TECH	Dietrich, J. W.	JSC	Epstein, S.	NGL 05-002-190	1300
13	CALIF INST OF TECH	Dietrich, J. W.	JSC	Albee, A. L.	NGL 05-002-338	1302
13	CALIF INST OF TECH	Dietrich, J. W.	JSC	Tombrello, T. A.	NGR 05-002-333	1305
13	CALIF INST OF TECH	Brinton, H. C.	HQ-EL	Ingersoll, A. P.	NAGW 159	1267
13	CALIF INST OF TECH	Owens, F. C.	HQ-LB	Phillips, T. G.	NGT 05-002-800	1306
13	CALIF INST OF TECH	Boese, R. W.	ARC	Nanes, R.	NCA 2-253901	1333
13	CAL STATE U-FULLERTN	Dietrich, J. W.	JSC	Woolum, D. S.	NAG 9-57	1332
13	CAL STATE U-FULLERTN	Kolecki, J. C.	LARC	Mann, J.	NAG 3-217	3948
13	CASE WESTERN RESERVE	Kosmahl, H. G.	LERC	Hazon, D.	NAG 3-24	3932
13	CASE WESTERN RESERVE	Evans, J. C.	LERC	Kapoor, V. J.	NAG 3-80	3938
13	CASE WESTERN RESERVE	Haugland, E. J.	LERC	Segall, B.	NAG 3-267	3960
13	CASE WESTERN RESERVE	Purvis, C. K.	LERC	Gordon, W. L.	NAG 3-352	3974
13	CASE WESTERN RESERVE	Powell, J. A.	LERC	Fung, C. D.	NAG 3-389	3978
13	CASE WESTERN RESERVE	Purvis, C. K.	LERC	Gordon, W. L.	NAG 3-426	3984
13	CASE WESTERN RESERVE	Haugland, E.	LERC	Segall, B.	NCC 3-25	4004
13	CASE WESTERN RESERVE	Staskus, J. V.	LERC	Gordan, W. L.	NSG 3197	4012
13	CASE WESTERN RESERVE	Owens, F. C.	HQ-LB	Taylor, P.	NGT 36-027-801	4009
13	CASE WESTERN RESERVE	Chipman, E.	HQ-EZ	Whang, Y. C.	NSG 7422	2184
13	CATHOLIC UNIVERSITY	Carter, C. H.	HQ-LB	Wernitz, C. W.	NGT 09-005-800	2181
13	CATHOLIC UNIVERSITY	Byvik, C. E.	LARC	Buoncrisiani, A. M.	NSG 1514	4783
13	CHRISTOPHER NEWPORT COL	Lauver, R. W.	LERC	Alfano, R. R.	NAG 3-130	3614
13	CITY COLLEGE OF N Y	Temkin, A.	GSFC	Mittleman, M. H.	NSG 5334	3624
13	CITY U N Y-GRAD SCHL	Fallon, R. A.	MSFC	Subramanian, R. S.	NAS 8-32944	3629
13	CLARKSON COL OF TECH	Owens, F. C.	HQ-LB	Isgell, J. T.	NGT 41-001-800	4409
13	CLEMSON UNIV-CLEMSON	Weinberg, I.	LERC	Goradia, C.	NAG 3-138	4018
13	CLEVELAND STATE UNIV	Baraona, C. R.	LERC	Goradia, C.	NAG 3-144	4019
13	CLEVELAND STATE UNIV	Wintucky, E. G.	LERC	Schlosser, H.	NAG 3-372	4031
13	CLEVELAND STATE UNIV	Smith, M. A.	LARC	Benner, D. C.	NCC 1-80	4798
13	COLLEGE OF WM & MARY	Exton, R. J.	LARC	She, C. Y.	NSG 1594	2044
13	COLORADO STATE UNIV	Mantenieks, M. A.	LERC	Robinson, R. S.	NAG 3-209	2031
13	COLORADO STATE UNIV	Jones, W. R.	LERC	Spain, I. L.	NAGW 8	2038
13	COLORADO STATE UNIV	Rawlin, V. K.	LERC	Kaufman, H. R.	NSG 3011	2045
13	COLORADO STATE UNIV	Grier, N. T.	LERC	Kaufman, H. R.	NSG 3196	2047
13	COLORADO STATE UNIV	Early, L. J.	GSFC	Novick, R.	NAG 5-618	3639
13	COLUMBIA UNIVERSITY	Jennings, N.	GSFC	Yavarkousky, J. H.	NAS 5-26398	3645
13	COLUMBIA UNIVERSITY					

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13	CORNELL UNIVERSITY	McCreight, C. R.	ARC	Houck, J. R.	NAG 2-177	3670
13	CORNELL UNIVERSITY	Early, L. J.	GSFC	Kintner, P. M.	NAG 5-601	3679
13	CORNELL UNIVERSITY	Conrath, B. J.	GSFC	Gierasch, P. J.	NAS 5-23236	3689
13	CORNELL UNIVERSITY	Butler, D. M.	HQ-EE	Sudan, R. N.	NAGW 90	3681
13	DARTMOUTH COLLEGE	Cooper, D. M.	ARC	Christy, R. W.	NSG 2397	3488
13	DREXEL UNIVERSITY	Brooks, W. F.	ARC	Acquista, C. A.	NSG 2357	4268
13	DREXEL UNIVERSITY	Cherrix, G. T.	GSFC	House, F. B.	NAS 5-22946	4262
13	DUKE UNIVERSITY	Brooks, W. F.	ARC	Meyer, H.	NAG 2-222	3876
13	DUKE UNIVERSITY	Brooks, W. F.	LARC	Meyer, H.	NAG 2-128	3875
13	EASTERN KENTUCKY U	Fishman, G. J.	MSFC	Laird, C. E.	NAS 8-35180	2752
13	FISK UNIVERSITY	Kroes, R. L.	MSFC	Springer, J. M.	NAG 8-10	4421
13	FISK UNIVERSITY	Kroes, R. L.	MSFC	Silberman, E.	NSG 8060	4422
13	FLORIDA A&M UNIV	Temkin, A.	GSFC	Jones, H. N.	NSG 5307	2257
13	FURMAN UNIVERSITY	Mayr, H. G.	GSFC	Porter, H. S.	NAG 5-312	4413
13	GEORGE WASHINGTON U	Holt, S. S.	HQ-MF	Hobbs, H. H.	NASW 3754	2201
13	GEORGIA INST OF TECH	Krawczonek, W. M.	LERC	Summers, C. J.	NAG 3-442	2357
13	GEORGIA INST OF TECH	Whitaker, A. F.	MSFC	Grenga, H. E.	NAS 8-35048	2373
13	GRAMBLING STATE UNIV	Tandberghanssen, E. A.	MSFC	Cross, M. A.	NAG 8-2	2773
13	HAMPTON INSTITUTE	Conway, E. J.	LARC	Venable, D. D.	NAG 1-400	4809
13	HAMPTON INSTITUTE	Jalufka, N. W.	LARC	Han, K. S.	NSG 1595	4817
13	HAMPTON INSTITUTE	Owens, F. C.	HQ-LB	Venable, D. D.	NGT 47-020-801	4816
13	HARVARD UNIVERSITY	Reed, E. I.	GSFC	Parkinson, W. H.	NAG 5-144	3010
13	HARVARD UNIVERSITY	Early, L. J.	GSFC	Parkinson, W. H.	NSG 5128	3038
13	HARVARD UNIVERSITY	Frederick, J. E.	GSFC	Parkinson, W. H.	NSG 5176	3039
13	HARVARD UNIVERSITY	Gardner, L. B.	MSFC	Spaepen, F.	NAS 8-35416	3028
13	HARVARD UNIVERSITY	Chipman, E.	HQ-EZ	Vaiana, G. S.	NAGW 2	3015
13	HARVARD UNIVERSITY	Chipman, E. G.	HQ-EZ	Parkinson, W. H.	NGL 22-007-006	3031
13	HARVARD UNIVERSITY	Chipman, E.	HQ-EZ	Maxwell, A.	NSG 7648	3043
13	HOWARD UNIVERSITY	Miller, G. E.	GSFC	Halpern, J. B.	NAG 5-17	2226
13	HOWARD UNIVERSITY	Osantowski, J. F.	GSFC	Catchings, R. M.	NAG 5-79	2228
13	HOWARD UNIVERSITY	Yin, L. I.	GSFC	Tsang, T.	NAG 5-156	2229
13	HOWARD UNIVERSITY	Alcorn, G. E.	GSFC	Harris, G. L.	NSG 5158	2246
13	HOWARD UNIVERSITY	Powell, J. A.	LERC	Spencer, M. G.	NAG 3-431	2225
13	HOWARD UNIVERSITY	Owens, F. C.	HQ-LB	Jackson, W.	NGT 09-011-800	2242
13	JOHNS HOPKINS UNIV	Lawandy, N. M.	GSFC	Robinson, D. W.	NAG 5-157	2812
13	JOHNS HOPKINS UNIV	Early, L. J.	GSFC	Feldman, P. D.	NAG 5-619	2816
13	JOHNS HOPKINS UNIV	Fowler, W. S.	GSFC	Fastie, W. G.	NAS 5-25358	2826
13	JOHNS HOPKINS UNIV	Lynch, J. T.	HQ-EE	Williams, D. J.	NAGW 497	2823
13	JOHNS HOPKINS UNIV	Lynch, J. T.	HQ-EE	Potemra, T. A.	NSG 7055	2846
13	JOHNS HOPKINS UNIV	Quaide, W. L.	HQ-EL	Krimigis, S. M.	NAGW 154	2818
13	JOHNS HOPKINS UNIV	Carter, C. H.	HQ-LB	Phillips, O.	NGT 21-001-980	2841
13	JOHNS HOPKINS UNIV	Carter, C. H.	HQ-LB	Judd, B. R.	NGT 21-001-981	2842
13	MASS INST OF TECH	Ogilvie, K. W.	GSFC	Lazarus, A. J.	NAS 5-27261	3143
13	MASS INST OF TECH	Mather, J.	GSFC	Weiss, R.	NAS 5-27591	3146
13	MASS INST OF TECH	Chang, F.	JSC	Montgomery, D. B.	NAS 9-16571	3157
13	MASS INST OF TECH	Bailey, M. C.	LARC	Hollister, W. M.	NAG 1-100	3050
13	MASS INST OF TECH	Katzberg, S. J.	LARC	Freed, C.	NAG 1-164	3053
13	MASS INST OF TECH	Brooks, T. F.	LARC	Harris, W. L.	NSG 1583	3187
13	MASS INST OF TECH	Terdan, F. F.	LERC	Holm, H.	NAG 3-283	3085
13	MASS INST OF TECH	Banks, B. A.	LERC	Dresselhaus, M. S.	NAG 3-439	3094
13	MASS INST OF TECH	Lynch, J. T.	HQ-EE	Bridge, H. S.	NGL 22-009-015	3168
13	MASS INST OF TECH	Quaide, W. L.	HQ-EL	Bridge, H. S.	NAGW 165	3118
13	MASS INST OF TECH	Chipman, E. G.	HQ-EZ	Olbert, S.	NAGW 375	3125
13	MASS INST OF TECH	Owens, F. C.	HQ-LB	Lewin, W.	NGT 22-009-902	3183
13	MIAMI UNIVERSITY	Deyoung, R. J.	LARC	Wells, W. E.	NCC 1-12	4058
13	MICHIGAN STATE UNIV	Chipman, E. G.	HQ-EZ	Stein, R. F.	NSG 7293	3270
13	MISSISSIPPI STATE U	Nachtwey, D. S.	JSC	Rundel, R.	NAS 9-16273	3394
13	N CAR CENTRAL UNIV	Kendall, B. M.	LARC	Jones, C. R.	NAG 1-187	3892
13	NO CAROLINA STATE U	Magee, C. J.	LARC	Bedair, S. M.	NAG 1-285	3897
13	NO CAROLINA STATE U	Meador, W. E.	LARC	Hassan, H. A.	NCC 1-54	3911

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
13	NO CAROLINA STATE U	Long, E. R., Jr.	LARC	Fornes, R. E.	NSG 1562	3915
13	NORTHWESTERN UNIV	Bill, R. C.	LERC	Nemat-nasser, S.	NAG 3-134	2449
13	OHIO STATE UNIV	Boese, R. W.	ARC	Rao, K. N.	NSG 2175	4096
13	OLD DOMINION UNIV	Fowler, W. B.	GSFC	Becher, J.	NSG 5289	4887
13	OLD DOMINION UNIV	Lebel, P. J.	LARC	Copeland, G. E.	NAG 1-1	4820
13	OLD DOMINION UNIV	Holmes, H. K.	LARC	Becher, J. E.	NAG 1-142	4827
13	OLD DOMINION UNIV	Holmes, H. K.	LARC	Becker, J.	NAG 1-234	4836
13	OLD DOMINION UNIV	Browell, E. V.	LARC	Copeland, G. E.	NCC 1-32	4859
13	OLD DOMINION UNIV	Melfi, L. T.	LARC	Brock, F. J.	NSG 1271	4875
13	OLD DOMINION UNIV	Wilson, J. W.	LARC	Harries, W. L.	NSG 1568	4883
13	OREGON GRADUATE CTR	McKenzie, R. L.	ARC	Elliott, R. A.	NSG 2387	4209
13	OREGON GRADUATE CTR	Owens, F. C.	HQ-LB	Elliott, R. A.	NGT 38-014-800	4208
13	OREGON STATE UNIV	Dietrich, J. W.	JSC	Schmitt, R. A.	NGL 38-002-039	4222
13	PENN STATE U-UNIV PK	Spencer, N. W.	GSFC	Nisbet, J. S.	NSG 5212	4347
13	PENN STATE U-UNIV PK	Staskus, J. V.	LERC	Kendall, B. R.	NSG 3301	4345
13	PENN STATE U-UNIV PK	Lynch, J. T.	HQ-EE	Nisbet, J. S.	NGL 39-009-003	4330
13	PENN STATE U-UNIV PK	Carter, C. H.	HQ-LB	Nisbet, J. S.	NGT 39-009-800	4331
13	PENN STATE U-UNIV PK	Owens, F. C.	HQ-LB	Usher, P. D.	NGT 39-009-804	4335
13	POLY INST OF NY	Benson, R. F.	HQ-EE	Gross, S. H.	NAGW 284	3746
13	PRINCETON UNIVERSITY	Early, L. J.	GSFC	Jenkins, E. B.	NAG 5-616	3530
13	PRINCETON UNIVERSITY	Chai, A. T.	LERC	Saville, D. A.	NAG 3-259	3521
13	PRINCETON UNIVERSITY	Taylor, T. C.	HQ-EP	Ostriker, J. P.	NAGW 120	3534
13	PRINCETON UNIVERSITY	Owens, F. C.	HQ-LB	Perry, M.	NGT 31-001-802	3557
13	RICE UNIVERSITY	Bullock, G. D.	GSFC	Reiff, P. H.	NAG 5-302	4500
13	RICE UNIVERSITY	Taylor, H. A., Jr.	GSFC	Cloutier, P. A.	NAS 5-23338	4507
13	RICE UNIVERSITY	Konradi, A.	JSC	Bernstein, W.	NAS 9-16672	4510
13	RICE UNIVERSITY	Lynch, J. T.	HQ-EE	Dessler, A. J.	NAGW 166	4502
13	RICE UNIVERSITY	Lynch, J. T.	HQ-EE	Hill, T. W.	NAGW 168	4503
13	RICE UNIVERSITY	Lynch, J. T.	HQ-EE	Wolf, R. A.	NGL 44-006-012	4515
13	RICE UNIVERSITY	Lynch, J. T.	HQ-EE	Reiff, P. H.	NGR 44-006-137	4517
13	RICE UNIVERSITY	Lynch, J. T.	HQ-LB	Bernstein, W.	NGT 44-006-801	4518
13	RICE UNIVERSITY	Owens, F. C.	HQ-MF	Michel, F. C.	NASW 3742	4513
13	RICE UNIVERSITY	Holt, S. S.	MSFC	Mohanty, R. C.	NAG 8-4	2788
13	SO UNIV & A&M COL-BR	Munafo, P. M.	ARC	Fairbanks, W. M.	NAG 2-62	1453
13	STANFORD UNIVERSITY	Brooks, W. F.	ARC	Bershader, D.	NAG 2-172	1461
13	STANFORD UNIVERSITY	McKenzie, R. L.	ARC	Petrosian, V.	NCA 2-745008	1514
13	STANFORD UNIVERSITY	Caroff, L. J.	ARC	Wagoner, R. V.	NCA 2-745308	1534
13	STANFORD UNIVERSITY	Barnes, A.	ARC	Heinemann, K.	NCC 2-46	1548
13	STANFORD UNIVERSITY	Arnold, J. O.	ARC	Byer, R. L.	NCC 2-50	1549
13	STANFORD UNIVERSITY	Chackerians, C.	ARC	Geballe, T. H.	NCC 2-120	1560
13	STANFORD UNIVERSITY	Kittel, P.	ARC	Tiller, W. A.	NCC 2-125	1561
13	STANFORD UNIVERSITY	Cooper, D. M.	GSFC	Banks, P. M.	NAG 5-611	1482
13	STANFORD UNIVERSITY	Early, L. J.	GSFC	Wilcox, J. M.	NAS 5-24420	1496
13	STANFORD UNIVERSITY	Wales, R. O.	GSFC	Walker, A. B.	NSG 5131	1604
13	STANFORD UNIVERSITY	Early, L. J.	LERC	Hesselink, L.	NAG 3-261	1473
13	STANFORD UNIVERSITY	Chai, A. T.	MSFC	Everitt, C. W.	NAS 8-34619	1506
13	STANFORD UNIVERSITY	Potter, R.	MSFC	Banks, P. M.	NAS 8-35350	1508
13	STANFORD UNIVERSITY	Reasoner, D.	HQ-EE	Sturrock, P. A.	NAGW 92	1485
13	STANFORD UNIVERSITY	Butler, D. M.	HQ-EE	Helliwell, R. A.	NAGW 164	1487
13	STANFORD UNIVERSITY	Lynch, J. T.	HQ-EE	Spreiter, J. R.	NAGW 278	1490
13	STANFORD UNIVERSITY	Lynch, J. T.	HQ-EE	Helliwell, R. A.	NGL 05-020-008	1580
13	STANFORD UNIVERSITY	Brinton, H. C.	HQ-EL	Eshleman, V. R.	NAGW 152	1486
13	STANFORD UNIVERSITY	Chipman, E. G.	HQ-EZ	Sturrock, P. A.	NGL 05-020-272	1584
13	STANFORD UNIVERSITY	Chipman, E.	HQ-EZ	Tyler, G. L.	NSG 7552	1606
13	STANFORD UNIVERSITY	Owens, F. C.	HQ-LB	Petrosian, V.	NGT 05-020-804	1596
13	STANFORD UNIVERSITY	Owens, F. C.	HQ-LB	Bates, C. W.	NGT 05-020-805	1597
13	STATE U NY-BINGHAMTN	Owens, F. C.	HQ-LB	Inman, D. J.	NGT 33-188-802	3809
13	ST U NY COL-GENESE	Heaney, J. B.	GSFC	Alley, P. W.	NAS 5-27685	3855
13	STATE U NY-STONY BRK	Ramaty, R.	GSFC	Forman, M. A.	NAS 5-26395	3834
13	STATE U NY-STONY BRK	Dietrich, J. W.	JSC	Lindsley, D. H.	NAG 9-31	3824



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13	STATE U NY-STONY BRK	Dietrich, J. W.	JSC	Lindsley, D. H.	NGL 33-015-130	3841
13	TEXAS A&M UNIVERSITY	Yu, J. C.	LARC	Morrison, G. L.	NAG 1-112	4539
13	UNIV ALA-BIRMINGHAM	Hoover, R. B.	MSFC	Shealy, D. L.	NAS 8-34728	1023
13	UNIV ALA-HUNTSVILLE	Parnell, T. A.	MSFC	Gregory, J. C.	NAS 8-31170	1029
13	UNIV ALA-HUNTSVILLE	Theiss, J. M.	MSFC	Rush, J. E.	NAS 8-33731	1037
13	UNIV ALA-HUNTSVILLE	Fishman, G. J.	MSFC	Gregory, J.	NAS 8-33975	1042
13	UNIV ALA-HUNTSVILLE	Chappell, C. R.	MSFC	Comfort, R. H.	NAS 8-33982	1044
13	UNIV ALA-HUNTSVILLE	Gardner, L.	MSFC	Workman, G. L.	NAS 8-34530	1047
13	UNIV ALA-HUNTSVILLE	Lehoczy, S. L.	MSFC	Holland, L. R.	NAS 8-34957	1052
13	UNIV ALA-HUNTSVILLE	Roberts, W. T.	MSFC	Wu, S. T.	NAS 8-35304	1054
13	UNIV ALA-HUNTSVILLE	Chappel, C. R.	MSFC	Olsen, R. C.	NAS 8-35339	1056
13	UNIV ALA-HUNTSVILLE	Parnell, T. A.	MSFC	Gregory, J. C.	NAS 8-35354	1057
13	UNIV ALA-HUNTSVILLE	Chipman, E. G.	HQ-EZ	Wu, S. T.	NAGW 9	1027
13	UNIV ALA-HUNTSVILLE	Chipman, E. G.	HQ-EZ	Emslie, A. G.	NAGW 294	1028
13	UNIV ALA-HUNTSVILLE	Owens, F. C.	HQ-LB	Horowitz, J. L.	NGT 01-008-800	1064
13	UNIV ALA-HUNTSVILLE	Carter, C. H.	HQ-LB	Horowitz, J. L.	NGT 01-008-801	1065
13	UNIV ALA-HUNTSVILLE	Owens, F. C.	HQ-LB	Gregory, J. C.	NGT 01-008-802	1066
13	UNIV ALA-UNIVERSITY	Owens, F. C.	HQ-LB	Desmet, D. J.	NGT 01-002-800	1070
13	UNIV ALASKA-FAIRBNKS	O'brien, J. J.	GSFC	Rees, M. H.	NAS 5-26868	1074
13	UNIV OF ARIZONA	Ostrow, H.	GSFC	Slater, P. N.	NAG 5-196	1136
13	UNIV OF ARIZONA	O'brien, J. J.	GSFC	Sonett, C. P.	NAS 5-26869	1183
13	UNIV OF ARIZONA	Dietrich, J. W.	JSC	Zellner, B. H.	NAG 9-36	1147
13	UNIV OF ARIZONA	Anderson, L. M.	LERC	Stegeman, G. I.	NAG 3-392	1130
13	UNIV OF ARIZONA	Lynch, J. T.	HQ-EE	Hood, L. L.	NAGW 157	1158
13	UNIV OF ARIZONA	Tuyahov, A. J.	HQ-EL	Bier, M.	NSG 7333	1227
13	UNIV OF ARIZONA	Mayr, H. G.	HQ-EZ	Hsieh, K. C.	NGR 03-002-107	1207
13	UNIV OF ARIZONA	Lynch, J. T.	HQ-EZ	Sonett, C. P.	NSG 7024	1220
13	UNIV CALIF-BERKELEY	Kittel, P.	ARC	Richards, P. L.	NAG 2-102	1607
13	UNIV CALIF-BERKELEY	Wales, R. O.	GSFC	Heckman, H. H.	NAS 5-20995	1641
13	UNIV CALIF-BERKELEY	O'brien, J. J.	GSFC	Mozer, F. S.	NAS 5-26847	1650
13	UNIV CALIF-BERKELEY	O'brien, J. J.	GSFC	Lin, R. P.	NAS 5-26855	1651
13	UNIV CALIF-BERKELEY	Dietrich, J. W.	JSC	Reynolds, J. H.	NAG 9-34	1625
13	UNIV CALIF-BERKELEY	Dietrich, J. W.	JSC	Reynolds, J. H.	NGL 05-003-409	1679
13	UNIV CALIF-BERKELEY	Sachse, G. W.	LARC	Chiao, R. Y.	NSG 1637	1693
13	UNIV CALIF-BERKELEY	Chai, A. T.	LERC	Concus, P.	NAG 3-146	1613
13	UNIV CALIF-BERKELEY	Rosendhal, J. D.	HQ-E	Price, P. B.	NGL 05-003-497	1680
13	UNIV CALIF-BERKELEY	Bogges, N. W.	HQ-EZ	Richards, P. L.	NAGW 369	1633
13	UNIV CALIF-BERKELEY	Chipman, E. G.	HQ-EZ	Lin, R. P.	NSG 7527	1700
13	UNIV CALIF-BERKELEY	Owens, F. C.	HQ-LB	Townes, C. H.	NGT 05-003-803	1692
13	UNIV CALIF-IRVINE	Anderson, L. M.	LERC	Mills, D. L.	NAG 3-250	1724
13	UNIV CALIF-IRVINE	Anderson, L. M.	LERC	Ushioda, S.	NAG 3-322	1725
13	UNIV CALIF-IRVINE	Butler, D. M.	HQ-EE	Hoven, G. V.	NAGW 93	1726
13	UNIV CALIF-IRVINE	Chipman, E. G.	HQ-EZ	Van Hoven, G.	NSG 7375	1735
13	UNIV CALIF-L ANGELES	Bullock, G. D.	GSFC	Maggs, J. E.	NAS 5-25039	1769
13	UNIV CALIF-L ANGELES	O'brien, J. J.	GSFC	McPherron, R. L.	NAS 5-26852	1773
13	UNIV CALIF-L ANGELES	O'brien, J. J.	GSFC	Ashour-abdalla G, M.	NAS 5-26871	1774
13	UNIV CALIF-L ANGELES	Dietrich, J. W.	JSC	Kerridge, J. F.	NGR 05-007-289	1789
13	UNIV CALIF-L ANGELES	Rice, E. J.	LERC	Charwat, A. F.	NSG 3236	1797
13	UNIV CALIF-L ANGELES	Lynch, J. T.	HQ-EE	Walker, R. J.	NAGW 162	1761
13	UNIV CALIF-L ANGELES	Lynch, J. T.	HQ-EE	Stenzel, R. L.	NAGW 180	1762
13	UNIV CALIF-L ANGELES	Chipman, E.	HQ-EZ	Ulrich, R. K.	NAGW 472	1766
13	UNIV CALIF-SAN DIEGO	Early, L. J.	GSFC	Torbert, R. B.	NAG 5-610	1828
13	UNIV CALIF-SAN DIEGO	Ramaty, R.	GSFC	Lingenfelter, R. E.	NAS 5-26668	1851
13	UNIV CALIF-SAN DIEGO	O'brien, J. J.	GSFC	McIlwain, C. E.	NAS 5-26854	1852
13	UNIV CALIF-SAN DIEGO	Purvis, C. K.	LERC	Whipple, E. C.	NAG 3-320	1817
13	UNIV CALIF-SAN DIEGO	DeLoach, A. C.	MSFC	Svestka, Z.	NAS 8-32984	1859
13	UNIV CALIF-SAN DIEGO	Lynch, J. T.	HQ-EE	Fillius, W.	NAGW 336	1842
13	UNIV CALIF-SAN DIEGO	Lynch, J. T.	HQ-EE	McIlwain, C. E.	NGL 05-005-007	1871
13	UNIV CALIF-SAN DIEGO	Kaluziowski, L. J.	HQ-EZ	Peterson, L. E.	NGL 05-005-003	1869
13	UNIV CALIF-SAN DIEGO	Chipman, E. G.	HQ-EZ	Hudson, H. S.	NSG 7161	1883

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13	UNIV CALIF-SAN DIEGO	Chipman, E. G.	HQ-EZ	Canfield, R. C.	NSG 7406	1886
13	UNIV CALIF-S BARBARA	McKenzie, R. L.	ARC	Colson, W. B.	NAG 2-48	1917
13	UNIV CALIF-S BARBARA	Gordon, P. G.	HQ-EN	Heeger, A. J.	NAGW 391	1928
13	UNIV CALIF-S CRUZ	Owens, F. C.	HQ-LB	Bodenheimer, P.	NGT 05-061-800	1955
13	UNIV OF CHICAGO	Wales, R. O.	GSFC	Wiedenbeck, M. E.	NAG 5-308	2475
13	UNIV OF CHICAGO	Wales, R. O.	GSFC	Meyer, P.	NAS 5-20674	2487
13	UNIV OF CHICAGO	Davis, M. A.	GSFC	Simpson, J. A.	NAS 5-24430	2488
13	UNIV OF CHICAGO	Dietrich, J. W.	JSC	Smith, J. V.	NAG 9-47	2477
13	UNIV OF CHICAGO	Dietrich, J. W.	JSC	Smith, J. V.	NGL 14-001-171	2501
13	UNIV OF CINCINNATI	Kolecki, J.	LERC	Jackson, H.	NAG 3-128	4132
13	UNIV COLORADO-BOLDR	Ramaty, R.	GSFC	Zweibel, E. G.	NAS 5-26535	2087
13	UNIV COLORADO-BOLDR	Early, L. J.	GSFC	Rottman, G. T.	NSG 5178	2109
13	UNIV COLORADO-BOLDR	Jalufka, N. W.	LARC	Leone, S. R.	NAG 1-170	2050
13	UNIV COLORADO-BOLDR	Chai, A. T.	LERC	Sani, R. L.	NAG 3-342	2054
13	UNIV COLORADO-BOLDR	Butler, D. M.	HQ-EE	Dulk, G. A.	NAGW 91	2068
13	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Hord, C. W.	NAGW 155	2069
13	UNIV COLORADO-BOLDR	Chipman, E.	HQ-EZ	Timothy, J. G.	NAGW 396	2078
13	UNIV COLORADO-BOLDR	Chipman, E.	HQ-EZ	Linsky, J. L.	NGL 06-003-057	2105
13	UNIV COLORADO-BOLDR	Chipman, E. G.	HQ-EZ	Dulk, G. A.	NSG 7287	2115
13	UNIV COLORADO-BOLDR	Chipman, E.	HQ-EZ	Thomas, R. N.	NSG 7291	2116
13	UNIV COLORADO-BOLDR	Chipman, E. G.	HQ-EZ	Gebbie, K. B.	NSG 7511	2118
13	UNIV OF DENVER	Fogle, V.	MSFC	Plooster, M. N.	NAS 8-34604	2129
13	UNIV OF DENVER	Lynch, J. T.	HQ-EE	Patel, V. L.	NAGW 158	2123
13	UNIV DIST COLUMBIA	Mentall, J. E.	GSFC	Morgan, H. D.	NSG 5192	2251
13	UNIV OF FLORIDA	Deyoung, R. J.	LARC	Schneider, R. T.	NAG 1-135	2278
13	UNIV OF FLORIDA	Meador, W. E.	LARC	Ohrn, N. Y.	NAG 1-178	2280
13	UNIV OF HAWAII-MANOA	DeLoach, A. C.	MSFC	Heasley, J. N.	NAS 8-33219	2417
13	UNIV OF HAWAII-MANOA	Brinton, H. C.	HQ-EL	Pilcher, C. B.	NAGW 153	2410
13	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Morrison, D.	NSG 7633	2433
13	UNIV OF HAWAII-MANOA	Chipman, E. G.	HQ-EZ	Jefferies, J. T.	NSG 7536	2430
13	UNIV HOUSTON-HOUSTON	Early, L. J.	GSFC	Sheldon, W. R.	NAG 6-18	4607
13	UNIV HOUSTON-HOUSTON	Ratz, T. J.	MSFC	Chu, C. W.	NAS 8-34955	4612
13	UNIV HOUSTON-CL LAKE	Dietrich, J. W.	JSC	Blanford, G. E.	NSG 9043	4634
13	UNIV ILLINOIS-URBANA	Jalufka, N. W.	LARC	Miley, G. H.	NSG 1547	2545
13	UNIV ILLINOIS-URBANA	Deyoung, R. J.	LARC	Verdeyen, J. T.	NSG 1609	2546
13	UNIV ILLINOIS-URBANA	Lynch, J. T.	HQ-EE	Liu, C. H.	NASW 3646	2539
13	UNIV OF IOWA	Fellerman, K. D.	GSFC	Frank, L. A.	NAS 5-24293	2672
13	UNIV OF IOWA	Gemmell, J. D.	GSFC	Frank, L. A.	NAS 5-25530	2673
13	UNIV OF IOWA	O'brien, J. J.	GSFC	Shawhan, S. D.	NAS 5-26843	2681
13	UNIV OF IOWA	O'brien, J. J.	GSFC	Gurnett, D. A.	NAS 5-26857	2682
13	UNIV OF IOWA	O'brien, J. J.	GSFC	Frank, L. A.	NAS 5-27358	2684
13	UNIV OF IOWA	Sovey, J. S.	LERC	Carpenter, R. T.	NAG 3-206	2658
13	UNIV OF IOWA	Guynes, B. V.	MSFC	Shawhan, S.	NAS 8-33770	2686
13	UNIV OF IOWA	Rosendhal, J. D.	HQ-E	Gurnett, D. A.	NAGW 386	2669
13	UNIV OF IOWA	Lynch, J. T.	HQ-EE	Calvert, W.	NAGW 256	2666
13	UNIV OF IOWA	Lynch, J. T.	HQ-EE	Grabbe, C. L.	NAGW 364	2668
13	UNIV OF IOWA	Lynch, J. T.	HQ-EE	Van Allen, J. A.	NGL 16-001-002	2687
13	UNIV OF IOWA	Lynch, J. T.	HQ-EE	Gurnett, D. A.	NGL 16-001-043	2688
13	UNIV OF KANSAS	Schmugge, T.	GSFC	Kanemasy, E. T.	NAS 5-27191	2718
13	UNIV OF KANSAS	Purvis, C. K.	LERC	Enoch, J.	NSG 3290	2742
13	UNIV OF KANSAS	Lynch, J. T.	HQ-EE	Armstrong, T. P.	NAGW 289	2714
13	UNIV MARYLAND-COL PK	Jones, F. C.	GSFC	Chang, C. C.	NAG 5-135	2870
13	UNIV MARYLAND-COL PK	Early, L. J.	GSFC	Moore, J.	NAG 5-169	2872
13	UNIV MARYLAND-COL PK	Ogilvie, K. W.	GSFC	Coplan, M. A.	NAG 5-244	2879
13	UNIV MARYLAND-COL PK	Corrigan, J. P.	GSFC	Gloeckler, G.	NAS 5-20062	2903
13	UNIV MARYLAND-COL PK	Ramaty, R.	GSFC	Eicbler, D. S.	NAS 5-26582	2910
13	UNIV MARYLAND-COL PK	Dombrowski, M.	GSFC	Wilkerson, T. D.	NAS 5-26654	2914
13	UNIV MARYLAND-COL PK	O'brien, J. J.	GSFC	Gloeckler, G.	NAS 5-26856	2917
13	UNIV MARYLAND-COL PK	O'brien, J. J.	GSFC	Papadopoulos, K.	NAS 5-26870	2918
13	UNIV MARYLAND-COL PK	Hoffman, R. A.	GSFC	Coplan, M. A.	NGR 21-002-291	2943

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13	UNIV MARYLAND-COL PK	Heaps, W. S.	GSFC	McIlrath, T. J.	NSG 5313	2971
13	UNIV MARYLAND-COL PK	Singh, J. J.	LARC	Weber, J.	NAG 1-151	2857
13	UNIV MARYLAND-COL PK	Decher, R.	MSFC	Weber, J.	NAG 8-15	2890
13	UNIV MARYLAND-COL PK	Watson, R. T.	HQ-EB	Ginter, M. L.	NSG 7340	2977
13	UNIV MARYLAND-COL PK	Butler, D.	HQ-EE	Papadopoulos, K.	NASW 3726	2928
13	UNIV MARYLAND-COL PK	Chipman, E. G.	HQ-EZ	Gloeckler, G.	NAGW 101	2896
13	UNIV MARYLAND-COL PK	Chipman, E.	HQ-EZ	Kundu, M.	NAGW 415	2901
13	UNIV MARYLAND-COL PK	Chipman, E.	HQ-EZ	Kundu, M. R.	NAGW 483	2902
13	UNIV MARYLAND-COL PK	Opp, A. G.	HQ-EZ	Wilkerson, T. D.	NGR 21-002-006	2937
13	UNIV MARYLAND-COL PK	Chipman, E. G.	HQ-EZ	Kundu, M. R.	NGR 21-002-199	2941
13	UNIV MARYLAND-COL PK	Carter, C. H.	HQ-LB	Gloeckler, G.	NGT 21-002-803	2950
13	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Horwitz, J. L.	NGT 21-002-810	2957
13	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Wentzel, D. G.	NGT 21-002-813	2960
13	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Adler, I.	NGT 21-002-814	2961
13	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Park, R. L.	NGT 21-002-816	2963
13	UNIV MICH-ANN ARBOR	Early, L. J.	GSFC	Meriwether, J. W.	NAG 5-615	3291
13	UNIV MICH-ANN ARBOR	Haykin, D.	GSFC	Carignan, G. R.	NAS 5-25158	3316
13	UNIV MICH-ANN ARBOR	Early, L. J.	GSFC	Sharp, W. E.	NGR 23-005-360	3336
13	UNIV MICH-ANN ARBOR	Chai, A. T.	LERC	Merte, H., Jr.	NAG 3-403	3285
13	UNIV MICH-ANN ARBOR	Fields, S. A.	MSFC	Nagy, A. F.	NAS 8-34533	3325
13	UNIV MICH-ANN ARBOR	Lynch, J. T.	HQ-EE	Hays, P. B.	NAGW 496	3299
13	UNIV MICH-ANN ARBOR	Benson, R. F.	HQ-EE	Nagy, A. F.	NGR 23-005-015	3334
13	UNIV MICH-ANN ARBOR	Benson, R. F.	HQ-EE	Samir, U.	NGR 23-005-320	3335
13	UNIV OF MINN-DULUTH	Shook, D.	LERC	Sydor, M.	NAG 3-165	3352
13	U MINN-MNPLS-ST PAUL	Brooks, W. F.	ARC	Scriven, L. E.	NAG 2-63	3358
13	U MINN-MNPLS-ST PAUL	Pless, R. H.	GSFC	Cahill, L. J.	NAG 6-11	3364
13	U MINN-MNPLS-ST PAUL	Early, L. J.	GSFC	Winckler, J. R.	NSG 5088	3380
13	U MINN-MNPLS-ST PAUL	Early, L. J.	GSFC	Kellogg, P. J.	NSG 5373	3381
13	U MINN-MNPLS-ST PAUL	Dietrich, J. W.	JSC	Pepin, R. O.	NGL 24-005-225	3375
13	U MINN-MNPLS-ST PAUL	Rice, E. J.	LERC	Lambert, R. F.	NAG 3-161	3359
13	UNIV MO-ROLLA	Fogle, V.	MSFC	Hagen, D. E.	NAS 8-34603	3422
13	UNIV MO-ROLLA	Fallon, R. A.	MSFC	Day, D. E.	NAS 8-34758	3423
13	UNIV NEBRASKA-LINCLN	Weinberg, I.	LERC	Woollam, J. A.	NAG 3-120	3462
13	UNIV NEBRASKA-LINCLN	Liu, D. C.	LERC	Woollam, J. A.	NAG 3-154	3463
13	UNIV NEVADA-L VEGAS	Decker, A. J.	LERC	Cloud, S. D.	NAG 3-368	3476
13	UNIV NEW HAMP-DURHAM	Ogilvie, K. W.	GSFC	Hollweg, J. V.	NAG 5-130	3491
13	UNIV NEW HAMP-DURHAM	Early, L. J.	GSFC	Moore, T. E.	NAG 5-617	3493
13	UNIV NEW HAMP-DURHAM	Trainor, J. H.	GSFC	Webber, W. R.	NAS 5-24354	3501
13	UNIV NEW HAMP-DURHAM	Butler, D. M.	HQ-EE	Fisk, L. A.	NAGW 76	3496
13	UNIV NEW HAMP-DURHAM	Chipman, E. G.	HQ-EZ	Fisk, L. A.	NSG 7411	3508
13	UNIV OF NOTRE DAME	Groenewga, J.	LERC	Atassi, H.	NSG 3195	2629
13	UNIV OF PACIFIC	Kittel, P.	ARC	Rodriguez, F.	NCA 2-588302	1965
13	UNIV OF PITTSBURGH	Early, L. J.	GSFC	Zipf, E. C.	NAG 5-609	4363
13	UNIV OF PITTSBURGH	Kostiuk, T.	GSFC	Falk, J.	NAS 5-25013	4366
13	UNIV OF ROCHESTER	Chipman, E. G.	HQ-EZ	Thomas, J. H.	NSG 7562	3870
13	UNIV SAN FRANCISCO	Peck, E. E.	JSC	Benton, E. V.	NAS 9-15337	1969
13	UNIV SAN FRANCISCO	Parnell, T. A.	MSFC	Benton, E. V.	NAS 8-34340	1967
13	UNIV OF SOUTHERN CAL	Early, L. J.	GSFC	Judge, D. L.	NSG 5108	2020
13	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Broadfoot, L. A.	NAGW 161	2009
13	UNIV OF SOUTHERN CAL	Chipman, E.	HQ-EZ	Rhodes, E. J.	NAGW 13	2002
13	UNIV SO MISSISSIPPI	Jones, J. J.	LARC	Rayborn, G. H.	NAG 1-49	3405
13	UNIV TENNESSEE-KNOXV	Maguire, V. C.	GSFC	Daunt, S. J.	NAS 5-26896	4445
13	UNIV TENNESSEE-KNOXV	Anderson, R. C.	LERC	Lewis, J. W.	NAG 3-385	4439
13	UNIV TENNESSEE-KNOXV	Jones, L. W.	MSFC	Keefer, D. R.	NAS 8-34320	4449
13	UNIV TEXAS-AUSTIN	Chai, A. T.	LERC	Koschmieder, E. L.	NAG 3-393	4645
13	UNIV TEXAS-AUSTIN	Rice, E. J.	LERC	Blackstock, D. T.	NSG 3198	4679
13	UNIV TEXAS-DALLAS	Fellerman, K. D.	GSFC	Hanson, W. B.	NAS 5-24298	4699
13	UNIV TEXAS-DALLAS	Fellerman, K. D.	GSFC	Winningham, J. D.	NAS 5-24299	4700
13	UNIV TEXAS-DALLAS	Adkins, R. E.	GSFC	Hanson, W. B.	NAS 5-25310	4701
13	UNIV TEXAS-DALLAS	Duckett, R. J.	LARC	Hoffman, J. H.	NAG 1-320	4688

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13	UNIV TEXAS-DALLAS	Chappell, C. R.	MSFC	Hanson, W. B.	NAS 8-32831	4706
13	UNIV TEXAS-EL PASO	Quaide, W. L.	HQ-EL	Lawson, J. O.	NAGW 204	4718
13	UNIV OF UTAH	Willshire Jr., W. L.	LARC	Van Moorhem, W. K.	NAG 1-283	4742
13	UNIV OF UTAH	Lynch, J. T.	HQ-EZ	Sojka, J. J.	NAGW 260	4751
13	UNIV OF WASHINGTON	Early, L. E.	GSFC	Holzworth, R. H.	NAG 5-604	5045
13	UNIV OF WASHINGTON	O'brien, J. J.	GSFC	Parks, G. K.	NAS 5-26850	5069
13	UNIV OF WASHINGTON	Deyoung, R. J.	LARC	Christiansen, W. H.	NAG 1-176	5028
13	UNIV OF WASHINGTON	Mroz, T. S.	LERC	Hertzberg, A.	NAG 3-16	5033
13	UNIV WISC-MADISON	Lynch, J. T.	HQ-EE	Scherb, F.	NGR 50-002-162	5158
13	UTAH STATE UNIV	Early, L. J.	GSFC	Baker, K. D.	NAG 5-603	4760
13	UTAH STATE UNIV	Early, L. J.	GSFC	Raitt, W. J.	NAG 5-607	4761
13	UTAH STATE UNIV	Eiband, A. M.	GSFC	Long, D.	NAS 5-24455	4769
13	UTAH STATE UNIV	Spencer, N. W.	GSFC	St Maurice, J. P.	NSG 5215	4775
13	UTAH STATE UNIV	Taylor, T. C.	HQ-EP	Torr, D. G.	NAGW 119	4765
13	VANDERBILT UNIVERSITY	Jalufka, N. W.	LARC	Lee, J. H.	NCC 1-8	4471
13	VIRGINIA POLY INST	Cantrell, J. H., Jr.	LARC	Claus, R. O.	NAG 1-68	4932
13	VIRGINIA POLY INST	Cantrell, J. H.	LARC	Claus, R. O.	NAG 1-192	4948
13	VIRGINIA POLY INST	Cantrell, J. H., Jr.	LARC	Claus, R. O.	NAG 1-263	4960
13	VIRGINIA STATE UNIV	Singh, J. J.	LARC	McCoy, R. M.	NSG 1342	5025
13	WASHINGTON ST UNIV	Poppa, H. R.	ARC	Dickinson, J. T.	NCA 2-840002	5087
13	WASHINGTON ST UNIV	Poppa, H. R.	ARC	Dickinson, J. T.	NCA 2-840102	5088
13	WASHINGTON ST UNIV	Poppa, H.	ARC	Dickinson, J. T.	NCA 2-840201	5089
13	WASHINGTON ST UNIV	Nelson, H.	ARC	Dickinson, J. T.	NCA 2-840202	5090
13	WASHINGTON ST UNIV	Poppa, H. R.	ARC	Dickinson, J. T.	NCC 2-69	5091
13	WASHINGTON UNIVERSITY	Dietrich, J. W.	JSC	Walker, R. M.	NGL 26-008-065	3449
13	WASHINGTON UNIVERSITY	Heyman, J. S.	LARC	Miller, J. G.	NSG 1601	3451
13	YALE UNIVERSITY	Hoppe, J. C.	LARC	Chang, R. K.	NAG 1-37	2151
13	YORK COLLEGE-NY	Pohly, J. G.	HQ-LC	Spergel, M. S.	NSG 7454	3871
19	ALABAMA A&M UNIV	Moore, W. W., Jr.	MSFC	Lal, R. B.	NAS 8-32945	1003
19	ATLANTA UNIVERSITY	Greenbauer-seng, L. A.	LERC	Owen, G. S.	NAG 3-113	2332
19	AUGSBURG COLLEGE	Bullock, G. D.	GSFC	Engelbretson, M. J.	NAG 5-349	3350
19	BOSTON COLLEGE	Jaffe, R. L.	ARC	Guberman, S. L.	NAG 2-89	2985
19	BRIGHAM YOUNG UNIV	Fimmel, R. O.	ARC	Jones, D. E.	NAG 2-145	4739
19	BROOKLYN COLLEGE	Byvik, C. E.	LARC	Tomkiewicz, M.	NAG 1-44	3607
19	CALIF INST OF TECH	Dietrich, J. W.	JSC	Ahrens, T. J.	NSG 9019	1315
19	CALIF INST OF TECH	Chipman, E. G.	HQ-EZ	Martin, S. F.	NAGW 255	1274
19	CARNEGIE-MELLON UNIV	Hendricks, H. D.	LARC	Casasent, D.	NAG 1-265	4229
19	CASE WESTERN RESERVE	Chai, A.	LERC	Ostrach, S.	NAG 3-411	3982
19	CASE WESTERN RESERVE	Forman, R.	LERC	Hoffman, R. W.	NAG 3-474	3992
19	CASE WESTERN RESERVE	Liu, D. C.	LERC	Kapoor, V. J.	NCC 3-18	4003
19	CHRISTPHR NEWPRT COL	Wilson, J. W.	LARC	Chang, C. K.	NSG 1614	4784
19	CLARKSON COL OF TECH	Lauver, M. R.	LERC	Chin, D. T.	NAG 3-238	3628
19	CLARKSON COL OF TECH	Adams, W. R.	MSFC	Wilcox, W. R.	NAS 8-34308	3630
19	CLARKSON COL OF TECH	Moore, W. W., Jr.	MSFC	Wilcox, W. R.	NAS 8-34891	3633
19	COLLEGE OF WM & MARY	Phillips, D. H.	LARC	Krakauer, H.	NCC 1-77	4796
19	COLLEGE OF WM & MARY	Lynch, J. T.	HQ-EE	Montgomery, D. C.	NSG 7416	4803
19	COLUMBIA UNIVERSITY	Green, S.	GSFC	Flynn, G. W.	NCC 5-28	3656
19	COLUMBIA UNIVERSITY	Jones, C. T., III	MSFC	Pan, C. H.	NAS 8-34713	3649
19	CORNELL UNIVERSITY	Early, L. J.	GSFC	Kelley, M. C.	NSG 6020	3711
19	DRAKE UNIVERSITY	Fowles, W. W.	MSFC	Kopicky, K. J.	NAS 8-33728	2630
19	DREXEL UNIVERSITY	Clark, I. O.	LARC	Bose, S. M.	NAG 1-335	4250
19	GEORGE WASHINGTON U	Crouch, R. K.	LARC	Dressler, R. F.	NAG 1-325	2191
19	GEORGIA INST OF TECH	Goebel, J. H.	ARC	Holah, G.	NCC 2-182	2380
19	ILL INST OF TECH	Illg, W.	LARC	Daniel, I. M.	NAG 1-366	2438
19	IOWA STATE UNIV	Pollack, J. B.	ARC	Iverson, J. D.	NAG 2-151	2634
19	IOWA STATE UNIV	Pollack, J. B.	ARC	Richardson, S. M.	NCC 2-174	2646
19	JOHNS HOPKINS UNIV	O'brien, J. J.	GSFC	Feldman, P. D.	NAS 5-26848	2828
19	JOHNS HOPKINS UNIV	Lynch, J. T.	HQ-EE	Roelof, E. C.	NAGW 264	2819
19	MASS INST OF TECH	Stephanides, C.	GSFC	Shapiro, I. I.	NAS 5-25833	3140
19	MASS INST OF TECH	Pepper, S. V.	LERC	Johnson, K. H.	NCC 3-1	3165

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19	MASS INST OF TECH	Tuyahov, A. J.	HQ-EL	Gatos, H. C.	NSG 7331	3204
19	MICHIGAN STATE UNIV	Nakanishi, S.	LERC	Asmussen, J.	NAG 3-305	3259
19	MICHIGAN STATE UNIV	Nakanishi, S.	LERC	Asmussen, J.	NSG 3299	3269
19	MIDDLEBURY COLLEGE	Reeves, F. A.	MSFC	Hellawell, A.	NAS 8-33727	3276
19	MISSISSIPPI STATE U	Wiskerchen, M. J.	HQ-EE	Wolfson, L. T.	NAGW 54	4779
19	NEW MEX ST U-LAS CR	Powers, W. T.	MSFC	Beiting, E. J.	NAS 8-34907	3393
19	NO CAR A&T STATE U	Lynch, J. T.	HQ-EZ	Theimer, O. H.	NSG 7622	3595
19	NO CAR A&T STATE U	Hoell, J. M.	LARC	Yu, C.	NAG 1-82	3882
19	NO CAROLINA STATE U	Hoell, J. M.	LARC	Yu, C.	NAG 1-407	3887
19	NO CAROLINA STATE U	Crouch, R. K.	ARC	Bachmann, K. J.	NAG 1-354	3898
19	NO CAROLINA STATE U	Ledley, B.	GSFC	Manring, E. R.	NAS 5-27669	3906
19	NORTH KENTUCKY UNIV	Nakanishi, S.	LERC	Hawkins, C. E.	NAG 3-289	2755
19	NORTH KENTUCKY UNIV	Nakanishi, S.	LERC	Hawkins, C. E.	NAG 3-450	2756
19	NORTHWESTERN UNIV	Yates, I. C., Jr.	MSFC	Davis, S. H.	NAS 8-33881	2461
19	OLD DOMINION UNIV	Illg, W.	LARC	Goglia, G. L.	NAG 1-219	4833
19	OLD DOMINION UNIV	Townsend, L. W.	LARC	Khandelwal, G. S.	NCC 1-42	4861
19	OREGON GRADUATE CTR	Wintucky, E. G.	LERC	Swanson, L. W.	NAG 3-434	4205
19	PENN STATE U-UNIV PK	Early, L. J.	GSFC	Mitchell, J. D.	NAG 6-7	4306
19	PENN STATE U-UNIV PK	Early, L. J.	GSFC	Hale, L. C.	NSG 6004	4348
19	PENN STATE U-UNIV PK	Owens, F. C.	HQ-LB	Carlson, T. N.	NGT 39-009-801	4332
19	PRINCETON UNIVERSITY	Hoppe, J. C.	LARC	Miles, R. B.	NAG 1-152	3512
19	PURDUE UNIVERSITY	Tilg, W.	LARC	Sun, C. T.	NAG 1-222	2571
19	PURDUE UNIVERSITY	Anderson, L. M.	LERC	Schwartz, R. J.	NAG 3-433	2590
19	RENSSELAER POLY-NY	Liu, D. C.	LERC	Borrego, J. M.	NAG 3-175	3757
19	RICE UNIVERSITY	Benson, R. F.	HQ-EE	Bernstein, W.	NAGW 69	4501
19	SAN DIEGO STATE UNIV	McKenzie, R. L.	ARC	Massey, G. A.	NAG 2-104	1359
19	SAN JOSE STATE UNIV	Pollack, J. B.	ARC	Riegel, C. A.	NCC 2-237	1433
19	STANFORD UNIVERSITY	McKenzie, R. L.	ARC	Baganoff, D.	NAG 2-36	1450
19	STANFORD UNIVERSITY	McKenzie, R. L.	ARC	Harris, S. E.	NAG 2-44	1452
19	STANFORD UNIVERSITY	McKenzie, R. L.	ARC	Hesselink, L.	NAG 2-83	1454
19	STANFORD UNIVERSITY	Lee, G.	ARC	Hesselink, L.	NCA 2-745306	1532
19	STANFORD UNIVERSITY	Reeves, F. A.	MSFC	Tiller, W. A.	NAS 8-33110	1503
19	STANFORD UNIVERSITY	Lynch, J. T.	HQ-EE	Crawford, F. W.	NGL 05-020-176	1582
19	TEXAS A&M UNIVERSITY	Nuss, R.	JSC	Blanchard, A. J.	NAS 9-16717	4583
19	TUSKEGEE INSTITUTE	Kerslake, W. R.	LERC	Ray, P. K.	NAG 3-76	1015
19	UNIV ALA-HUNTSVILLE	Carey, W. T.	MSFC	Carter, E.	NAS 8-34187	1046
19	UNIV ALA-HUNTSVILLE	Ballance, J. O.	MSFC	Wu, S. T.	NAS 8-34573	1049
19	UNIV ALA-HUNTSVILLE	Carter, C. H.	HQ-LB	Wu, S. T.	NGT 01-002-081	1060
19	UNIV ALASKA-FAIRBNKS	Early, L. J.	GSFC	Wescott, E. M.	NAG 6-1	1072
19	UNIV ALASKA-FAIRBNKS	Lynch, J. T.	HQ-EE	Swift, D. W.	NAGW 269	1073
19	UNIV ALASKA-FAIRBNKS	Lynch, J. T.	HQ-EE	Akasofu, S. I.	NSG 7447	1080
19	UNIV OF ARIZONA	Fimmel, R. O.	ARC	Hunten, D. M.	NAG 2-143	1122
19	UNIV CALIF-BERKELEY	Bauer, E. H.	ARC	Colwell, R. N.	NCC 2-54	1667
19	UNIV CALIF-BERKELEY	Clark, T. A.	GSFC	Welch, W. J.	NAG 5-95	1616
19	UNIV CALIF-BERKELEY	Early, L. J.	GSFC	Mozer, F. S.	NAG 6-10	1621
19	UNIV CALIF-BERKELEY	Lynch, J. T.	HQ-EE	Bowyer, C. S.	NAGW 370	1634
19	UNIV CALIF-BERKELEY	Benson, R. F.	HQ-EE	Anderson, K. A.	NGL 05-003-017	1677
19	UNIV CALIF-L ANGELES	O'brien, J. J.	GSFC	Russell, C. T.	NAS 5-26846	1772
19	UNIV CALIF-L ANGELES	Lynch, J. T.	HQ-EE	Kennel, C. F.	NGL 05-007-190	1786
19	UNIV CALIF-L ANGELES	Quaide, W. L.	HQ-EL	Siscoe, G. L.	NAGW 333	1764
19	UNIV CALIF-SAN DIEGO	Fimmel, R. O.	ARC	Fillius, W.	NAG 2-153	1815
19	UNIV CALIF-SAN DIEGO	Scudder, J. D.	GSFC	Fillins, R. W.	NAS 5-27315	1856
19	UNIV CALIF-SAN DIEGO	Lynch, J. T.	HQ-EE	Alfven, H.	NSG 7623	1888
19	UNIV CALIF-S BARBARA	Bauer, E. H.	ARC	Estes, J. E.	NCC 2-124	1935
19	UNIV CALIF-S BARBARA	Toll, D. L.	GSFC	Estes, J.	NAS 5-27497	1931
19	UNIV OF CHICAGO	Moseley, S. H.	GSFC	Harper, D. A.	NAG 5-318	2476
19	UNIV OF CINCINNATI	Liu, D. C.	LERC	Kapoor, V. J.	NCC 3-33	4140
19	UNIV COLORADO-BOLDR	Fimmel, R. O.	ARC	Stewart, I. A.	NAS 2-9477	2081
19	UNIV COLORADO-BOLDR	Early, L. J.	GSFC	Barth, C. A.	NSG 5103	2107
19	UNIV OF GEORGIA	Blodget, H. W.	GSFC	Welch, R. A.	NAG 5-288	2394

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19	UNIV HOUSTON-HOUSTON	Owens, F. C.	HQ-LB	Middleditch, B. S.	NGT 44-005-800	4621
19	UNIV ILLINOIS-URBANA	Early, L. J.	GSFC	Bowhill, S. A.	NGR 14-005-181	2543
19	UNIV ILLINOIS-URBANA	Nussle, R. C.	LERC	Strehlow, R. A.	NAS 3-23770	2535
19	UNIV OF IOWA	Bullock, G. D.	GSFC	Gurnett, D. A.	NAG 5-310	2664
19	UNIV OF IOWA	Purvis, C. K.	LERC	Shawhan, S. D.	NAG 3-449	2660
19	UNIV OF IOWA	Mayr, H. G.	HQ-EZ	Shawhan, S. D.	NAGW 190	2665
19	UNIV OF IOWA	Lynch, J. T.	HQ-EZ	Goertz, C. K.	NSG 7632	2690
19	UNIV OF KANSAS	Nuss, R. W.	JSC	Ulaby, F. T.	NAS 9-16709	2721
19	UNIV OF KANSAS	Lynch, J. T.	HQ-EE	Beard, D. B.	NAGW 217	2713
19	UNIV OF KANSAS	Brinton, H. C.	HQ-EL	Beard, D. B.	NAGW 187	2712
19	UNIV MARYLAND-COL PK	Hartle, R. E.	GSFC	Matthews, D. L.	NGR 21-002-316	2944
19	UNIV MARYLAND-COL PK	Lynch, J. T.	HQ-EE	Wu, C. S.	NGL 21-002-005	2935
19	UNIV MARYLAND-COL PK	Carter, C. H.	HQ-LB	Yeh, R. T.	NGT 21-002-805	2952
19	UNIV OF MASS-AMHERST	Fimmel, R. O.	ARC	McGill, G. E.	NAG 2-138	3221
19	UNIV NEW HAMP-DURHAM	Early, L. J.	GSFC	Arnoldy, R. L.	NAG 6-12	3494
19	UNIV OF PACIFIC	Lee, G.	ARC	Perry, R. L.	NCA 2-588201	1961
19	UNIV OF PITTSBURGH	Early, L. J.	GSFC	Zipf, E. C.	NAG 6-2	4364
19	UNIV OF ROCHESTER	Anderson, L. M.	LERC	Hall, D. G.	NAG 3-414	3866
19	UNIV OF SANTA CLARA	Whitten, R. C.	ARC	McCormick, P. T.	NCC 2-130	1993
19	UNIV OF SOUTHERN CAL	Fimmel, R. O.	ARC	Judge, D. L.	NAG 2-146	2000
19	UNIV STHN COLORADO	Lofgren, G.	JSC	Smith, R. K.	NSG 9051	2136
19	UNIV TENNESSEE-KNOXV	Chai, A. T.	LERC	Parang, M.	NAG 3-239	4436
19	UNIV TEXAS-AUSTIN	Stephanides, C.	GSFC	Tapley, B.	NAS 5-25991	4656
19	UNIV TEXAS-DALLAS	Bullock, G. D.	GSFC	Klumpar, D. M.	NAG 5-293	4691
19	UNIV TEXAS-DALLAS	Bullock, G. D.	GSFC	Hanson, W.	NAG 5-305	4692
19	UNIV TEXAS-DALLAS	Bullock, G. D.	GSFC	Heelis, R. A.	NAG 5-306	4693
19	UNIV TEXAS-DALLAS	Blanchard, R. C.	LARC	Hoffman, J. H.	NAG 1-251	4686
19	UNIV TEXAS-DALLAS	Blanchard, R. C.	LARC	Hoffman, J. H.	NAG 1-256	4687
19	UNIV TEXAS-DALLAS	Blanchard, R. C.	LARC	Hoffman, J. H.	NAS 1-17399	4696
19	UNIV TEXAS-DALLAS	Benson, R. F.	HQ-EE	Heikkila, W. J.	NAGW 53	4695
19	UNIV OF UTAH	Snyder, R. V.	GSFC	Staffanson, F. L.	NAG 6-15	4748
19	UNIV WISC-MADISON	Fimmel, R. O.	ARC	Limaye, S. S.	NAG 2-93	5105
19	UNIV WISC-MADISON	Lynch, J. T.	HQ-EE	Hershkowitz, N.	NAGW 275	5125
19	UTAH STATE UNIV	O'Brien, J. J.	GSFC	Torr, M. R.	NAS 5-26849	4771
19	UTAH STATE UNIV	Lynch, J. T.	HQ-EE	Torr, M. R.	NAGW 105	4764
19	VIRGINIA POLY INST	Byvik, C. E.	LARC	Finklea, H. O.	NAG 1-89	4935
19	VIRGINIA POLY INST	Progar, D. J.	LARC	Wightman, J. P.	NAG 1-248	4958
19	VIRGINIA POLY INST	Progar, D. J.	LARC	Wightman, J. P.	NAG 1-252	4959
19	VIRGINIA STATE UNIV	Wilson, J. W.	LARC	Stith, J. J.	NAG 1-374	5023
19	VIRGINIA STATE UNIV	Wilson, J. W.	LARC	Stronach, C. E.	NAG 1-416	5024
19	WASHINGTON UNIVERSTY	Rosenthal, J. D.	HQ-E	Walker, R. M.	NAGW 122	3438
19	YALE UNIVERSITY	Fallon, R. A.	MSFC	Nordine, P. C.	NAS 8-34383	2158
21	ATLANTA UNIVERSITY	Shoosmith, J. N.	LARC	Mickens, R. E.	NAG 1-410	2328
21	BOWIE STATE COLLEGE	Maury, J. L.	GSFC	Srivastava, S.	NGR 21-027-004	2802
21	BROWN UNIVERSITY	Armstrong, E. S.	LARC	Banks, H. T.	NAG 1-258	4382
21	CARNEGIE-MELLON UNIV	Owens, F. C.	HQ-LB	Fix, G. J.	NGT 39-087-800	4243
21	CARNEGIE-MELLON UNIV	Fontaine, M.	HQ-NS	Leinhardt, S.	NASW 3673	4241
21	COLLEGE OF WM & MARY	Senn, E. H.	LARC	Noonan, R. E.	NSG 1435	4800
21	COLORADO STATE UNIV	Lomax, H.	ARC	Thomas, J. W.	NCA 2-165201	2041
21	COOPER UNION COLLEGE	Evans, J. S.	LARC	Chinitz, W. C.	NAG 1-18	3663
21	DUKE UNIVERSITY	Ford, W. E.	LERC	Smith, D. A.	NSG 3160	3880
21	HAMPTON INSTITUTE	Haigler, G. W.	LARC	Shan, S. N.	NCC 1-7	4813
21	LA ST U&A&M COL-BRGE	Murphy, R. E.	HQ-EL	Henry, J. W.	NAGW 48	2777
21	MASS INST OF TECH	Yates, I. C.	MSFC	Greenspan, H. P.	NAS 8-35412	3154
21	MISSISSIPPI STATE U	Smith, R. E., Jr.	LARC	Thompson, J. F.	NSG 1577	3401
21	MOREHOUSE COLLEGE	Campbell, W.	MSFC	Bozeman, R. E.	NAG 8-3	2390
21	NEW YORK UNIVERSITY	Warming, R. F.	ARC	Harten, A.	NCA 2-525201	3734
21	NEW YORK UNIVERSITY	Warming, R. F.	ARC	Harten, A.	NCA 2-525301	3735
21	NEW YORK UNIVERSITY	South, J. C., Jr.	LARC	Garabedian, P. R.	NSG 1579	3740
21	NO CAROLINA STATE U	Wilhite, A. W.	LARC	Perkins, J. N.	NCC 1-49	3910

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
21	OHIO STATE UNIV	Baumbick, R. J.	LERC	Collins, S. A., Jr.	NSG 3302	4103
21	OLD DOMINION UNIV	Dagenhart, J. R.	LARC	Lakin, W. D.	NAG 1-175	4829
21	OLD DOMINION UNIV	Wornom, S. F.	LARC	Dorrepaal, J. M.	NAG 1-197	4832
21	OLD DOMINION UNIV	Schiess, J. R.	LARC	Smith, P. L.	NAG 1-223	4834
21	OLD DOMINION UNIV	Dagenhart, J. R.	LARC	Lakin, W. D.	NAG 1-297	4840
21	OLD DOMINION UNIV	Owens, F. C.	HQ-LB	Smith, P. W.	NGT 47-003-802	4872
21	QUEENSBOROUGH COMM C	MacKall, D. A.	DFRF	Scalzo, F.	NAG 4-9	3749
21	SOUTHERN METHODIST U	Houston, G.	JSC	Gray, H. L.	NAS 9-16438	4530
21	SOUTHERN METHODIST U	Browne, I. D.	JSC	Gunst, R. F.	NCC 9-9	4531
21	UNIV CALIF-BERKELEY	Carter, C. H.	HQ-LB	Shu, F. H.	NGT 05-003-800	1689
21	UNIV CALIF-DAVIS	Meyer, G.	ARC	Borges, C. R.	NCA 2-180201	1708
21	UNIV OF FLORIDA	Haigler, G. W.	LARC	Edwards, B. H.	NAG 1-39	2277
21	UNIV ILLINOIS-URBANA	Foudriat, E. C.	LARC	Campbell, R. H.	NSG 1471	2544
21	UNIV OF NEW ORLEANS	Lambiotte, J. J., Jr.	LARC	Ioup, G. E.	NSG 1648	2796
21	UNIV OF SANTA CLARA	Lomax, H.	ARC	Vinokur, M.	NCC 2-16	1988
21	UNIV TENNESSEE-KNOXV	Owens, F. C.	HQ-LB	Antar, B. N.	NGT 43-001-804	4458
21	WESTERN ILLINOIS U	Peebles, S. W.	LARC	McBride, W. E.	NAG 1-42	2552
22	ALABAMA A&M UNIV	Weisskoph, M. C.	MSFC	Williams, A. C.	NAS 8-34591	1004
22	ARIZONA STATE UNIV	Krosel, S. M.	LERC	O'grady, E. P.	NAG 3-112	1086
22	BOWIE STATE COLLEGE	Truszkowski, W. F.	GSFC	Srivastava, S.	NAS 5-27366	2800
22	BRIGHAM YOUNG UNIV	Speray, D. E.	LARC	Stephenson, M. B.	NAG 1-391	4738
22	CAL POLY ST U-S LUIS	Piazza, J. E.	ARC	Morgan, D. E.	NCA 2-678101	1321
22	CAL STATE U-FRESNO	Lim, R. S.	ARC	Heaney, A. A.	NCA 2-251301	1331
22	CATHOLIC UNIVERSITY	Smith, P. H.	GSFC	Welch, J. N.	NAG 5-311	2179
22	CLEVELAND STATE UNIV	Schulte, R. R.	LERC	Megargle, R.	NAG 3-254	4026
22	COLLEGE OF WM & MARY	Shipman, F. S.	LARC	Feyock, S.	NAG 1-360	4789
22	COLLEGE OF WM & MARY	Foudriat, E. C.	LARC	Feyock, S.	NSG 1626	4802
22	COLLEGE OF WM & MARY	Arpasi, D. J.	LERC	Feyock, S.	NAG 3-232	4790
22	DUKE UNIVERSITY	Salley, G. C.	LARC	Smith, C. U.	NAG 1-165	3873
22	FORT LEWIS COLLEGE	Fischer, J. R.	GSFC	Bell, G. W.	NAG 5-162	2048
22	GEORGE MASON UNIV	Truszkowski, W. F.	GSFC	Mitchell, C. M.	NAS 5-27587	4806
22	GEORGE WASHINGTON U	Truszkowski, W. F.	GSFC	Sibert, J. L.	NAS 5-26797	2196
22	GEORGE WASHINGTON U	Truszkowski, W. F.	GSFC	Sibert, J. L.	NAS 5-27585	2198
22	GEORGE WASHINGTON U	Migneault, G. E.	LARC	Miller, D. R.	NAG 1-179	2188
22	GEORGE WASHINGTON U	Speray, D. E.	LARC	Foley, J. D.	NAG 1-185	2189
22	HARVEY MUDD COLLEGE	Clary, G. R.	ARC	Wilde, D. U.	NCA 2-283301	1351
22	HARVEY MUDD COLLEGE	Gupta, K. K.	ARC	Tanenbaum, B. S.	NCA 2-283302	1352
22	HARVEY MUDD COLLEGE	Gupta, K. K.	ARC	Tanenbaum, B. S.	NCA 2-283303	1353
22	ILL INST OF TECH	Lim, R. S.	ARC	Costello, D. J., Jr.	NAG 2-202	2439
22	KENT STATE UNIV-KENT	Orlando, N. E.	LARC	Potter, J. L.	NAG 1-341	4050
22	LA GRANGE COLLEGE	Stearns, C. A.	LERC	Cooper, K., Jr.	NAG 3-371	2389
22	MASS INST OF TECH	Stevens, K. G.	ARC	Dennis, J. B.	NAG 2-247	3074
22	MASS INST OF TECH	Stevens, K. G.	ARC	Dennis, J. B.	NCA 2-425101	3161
22	MASS INST OF TECH	Shoosmith, J. N.	LARC	Moses, J.	NSG 1323	3184
22	MASS INST OF TECH	Larsen, R. L.	HQ-RT	Vandervelde, W. E.	NAGW 448	3129
22	MISSISSIPPI STATE U	Jobe, G. S.	MSFC	Ingels, F. M.	NAS 8-34906	3392
22	NORTHWESTERN UNIV	Shipman, F. S.	LARC	Scheuermann, P.	NAG 1-348	2447
22	OLD DOMINION UNIV	Wilhite, A. W.	LARC	Schwing, J. L.	NCC 1-74	4867
22	RICE UNIVERSITY	Jost, J.	JSC	Gordon, W. E.	NAS 9-16732	4511
22	SAN JOSE STATE UNIV	Deboo, G. J.	ARC	Strasilla, U.	NAG 2-215	1382
22	SAN JOSE STATE UNIV	Deiwert, G. S.	ARC	Phillips, V. L.	NCA 2-675302	1393
22	SO UNIV & A&M COL-BR	Weaver, A.	HQ-NS	Roquemore, L.	NASW 3344	2790
22	SO UNIV & A&M COL-BR	Lewis, D.	HQ-NS	Roquemore, L.	NASW 3786	2791
22	STANFORD UNIVERSITY	Stevens, K. G., Jr.	ARC	Lundstrom, S. F.	NAG 2-248	1468
22	STANFORD UNIVERSITY	Beam, R. M.	ARC	Oligier, J.	NCA 2-745004	1511
22	STANFORD UNIVERSITY	Leonard, A.	ARC	Ferziger, J. H.	NCA 2-745313	1539
22	STANFORD UNIVERSITY	Lum, H.	ARC	Feigenbaum, E. A.	NCC 2-220	1573
22	STANFORD UNIVERSITY	Paddack, S. J.	GSFC	Binford, T. O.	NAG 5-261	1481
22	STANFORD UNIVERSITY	Larsen, R. L.	HQ-RT	Banks, P. M.	NAGW 419	1495
22	STATE UNIV NY-BUFFAL	Foudriat, E. C.	LARC	Wittie, L. D.	NAG 1-249	3811

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22	STEVENS INST OF TECH	Smith, P. H.	GSFC	Sack, I. H.	NAG 5-371	3577
22	TEXAS A&M UNIVERSITY	Browne, I. D.	JSC	Sielken, R. L.	NAS 9-13894	4571
22	TEXAS A&M UNIVERSITY	Pels, G. F.	JSC	Jean, R.	NAS 9-16403	4575
22	TEXAS A&M UNIVERSITY	Whitehead, V. S.	JSC	McFarland, M. J.	NAS 9-16556	4578
22	TEXAS A&M UNIVERSITY	Whitehead, V.	JSC	McFarland, M. J.	NAS 9-16822	4585
22	TOWSON STATE UNIV	Smith, P. H.	GSFC	Grant, J. H.	NAG 5-267	2853
22	UNIV ALA-HUNTSVILLE	Juergensen, K.	MSFC	Shiva, S. G.	NAS 8-33096	1031
22	UNIV ALA-HUNTSVILLE	Green, J. L.	MSFC	Horowitz, J. L.	NAS 8-34534	1048
22	UNIV ALA-HUNTSVILLE	Owens, F. C.	HQ-LB	Horowitz, J. L.	NGT 01-002-804	1062
22	UNIV CALIF-BERKELEY	Bauer, E. H.	ARC	Colwell, R. N.	NCC 2-205	1675
22	UNIV CALIF-L ANGELES	Raby, J. S.	ARC	Karplus, W. J.	NAG 2-41	1739
22	UNIV CALIF-L ANGELES	Milner, E. J.	LERC	Ercegovac, M. D.	NAG 3-132	1745
22	UNIV CALIF-L ANGELES	Milner, E. J.	LERC	Ercegovac, M. D.	NAG 3-358	1747
22	UNIV CALIF-S BARBARA	Goldberg, M. J.	GSFC	Peuquet, D. J.	NAG 5-369	1922
22	UNIV COLORADO-BOLDR	Villasenor, A. J.	HQ-EI	Hansen, E.	NASW 3711	2097
22	UNIV DIST COLUMBIA	Purves, L. R.	GSFC	Finley, G. T.	NAG 5-91	2247
22	UNIV OF GEORGIA	Ault, L. A.	HQ-LG	Carmon, J. L.	NASW 3247	2397
22	UNIV ILLINOIS-URBANA	Schaefer, D. H.	GSFC	Slotnick, D. L.	NAS 5-26405	2536
22	UNIV ILLINOIS-URBANA	Senn, E. H.	LARC	Campbell, R. H.	NAG 1-138	2515
22	UNIV OF IOWA	Lupton, A. O.	LARC	Robinson, J. P.	NAG 1-195	2655
22	UNIV OF LOUISVILLE	Laid, S. C.	GSFC	Shelton, R. D.	NAS 5-26504	2767
22	UNIV OF MAINE-ORONO	Imhoff, M.	GSFC	Byther, T.	NAS 5-26574	2798
22	UNIV MARYLAND-COL PK	Wallgren, K.	GSFC	Rieger, C. J.	NAG 5-99	2868
22	UNIV MARYLAND-COL PK	Smith, P. H.	GSFC	Jacobs, B. E.	NAG 5-235	2878
22	UNIV MARYLAND-COL PK	McGarry, F. E.	GSFC	Basili, V. R.	NAG 5-368	2889
22	UNIV MARYLAND-COL PK	Dalton, J. T.	GSFC	Agrawala, A. K.	NAS 5-26649	2912
22	UNIV MARYLAND-COL PK	Truskowski, W. F.	GSFC	Yeh, R. T.	NAS 5-27378	2920
22	UNIV MARYLAND-COL PK	McGarry, F. E.	GSFC	Basili, V. R.	NSG 5123	2968
22	UNIV MARYLAND-COL PK	Barker, L. K.	LARC	Minker, J.	NAG 1-51	2856
22	UNIV OF MASS-AMHERST	Senn, E. H.	LARC	Wileden, J. C.	NAG 1-115	3218
22	UNIV MICH-ANN ARBOR	Arnold, J. O.	ARC	Calahan, D. A.	NCC 2-201	3332
22	UNIV MICH-ANN ARBOR	Butler, R. W.	LARC	Shin, K. G.	NAG 1-296	3279
22	UNIV OF PACIFIC	Goorjian, P. M.	ARC	Topp, W.	NCA 2-588203	1963
22	UNIV OF PITTSBURGH	Bivins, R. G.	HQ-LG	McWilliams, P. A.	NASW 3403	4367
22	UNIV OF SANTA CLARA	Jones, H. W., Jr.	ARC	Alkhatib, H.	NCA 2-685102	1981
22	UNIV OF SANTA CLARA	Jones, H. W., Jr.	ARC	Alkhatib, H.	NCA 2-685301	1984
22	UNIV OF SANTA CLARA	Jones, H. W., Jr.	ARC	Alkhatib, H.	NCA 2-685303	1986
22	UNIV OF SANTA CLARA	Jones, H. W., Jr.	ARC	Alkhatib, H.	NCA 2-685304	1987
22	UNIV SOUTHWESTERN LA	Lupton, A. O.	LARC	Kavi, K. M.	NAG 1-271	2797
22	UNIV OF SYDNEY	Jones, J. J.	LARC	Bird, G. A.	NAGW 385	5186
22	UNIV OF VIRGINIA	Lupton, A. O.	LARC	Pratt, T. W.	NAG 1-233	4892
22	UNIV OF VIRGINIA	Shoosmith, J. N.	LARC	Ortega, J. M.	NAG 1-242	4893
22	UNIV OF VIRGINIA	Senn, E. H.	LARC	Knight, J. C.	NAG 1-260	4894
22	UNIV OF WASHINGTON	Salley, G. C.	LARC	Erickson, W. J.	NAS 1-17108	5065
22	VIRGINIA POLY INST	Edge, J. T.	JSC	Nehl, T. W.	NAS 9-16281	4998
29	ATLANTA UNIVERSITY	Goode, P. W.	LARC	Setzer, C. B.	NAG 1-412	2330
29	CALIF INST OF TECH	Durbin, P. A.	LERC	Saffman, P. G.	NAG 3-179	1250
29	CARLETON UNIVERSITY	Connors, M. M.	ARC	George, D. A.	NCA 2-103101	5187
29	COLUMBIA UNIVERSITY	Smith, R. E.	LARC	Eiseman, P. R.	NCC 1-59	3653
29	DREW UNIVERSITY	Nixon, W. D.	HQ-LF	Clark, W.	NASW 3725	3510
29	DUKE UNIVERSITY	Bavuso, S. J.	LARC	Trivedi, K. S.	NAG 1-70	3872
29	DUKE UNIVERSITY	Fulton, R. E.	LARC	Loendorf, D. D.	NAG 1-218	3874
29	GEORGE MASON UNIV	Ondrus, P. J.	GSFC	Greenland, A.	NAS 5-27255	4805
29	HAMPTON INSTITUTE	Shoosmith, J. N.	LARC	Shah, S. N.	NAG 1-415	4810
29	IOWA STATE UNIV	Weilmuenster, K. J.	LARC	Tannehill, J. C.	NAG 1-313	2631
29	KENT STATE UNIV-KENT	Chamis, C. C.	LERC	Wang, P. S.	NAG 3-298	4051
29	MASS INST OF TECH	Nagel, D. C.	ARC	Simpson, R.	NAS 2-11232	3135
29	MISSISSIPPI STATE U	Graves, R. A.	HQ-RT	Thompson, J. F.	NASW 3552	3395
29	NEW YORK INST TECH	Pohly, J. G.	HQ-U	Williams, T.	NGT 33-230-830	3726
29	NORFOLK STATE UNIV	Shoosmith, J. N.	LARC	DeLoatch, S. J.	NAS 1-16921	4819



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29	NO CAROLINA STATE U	Schiess, J. R.	LARC	McAllister, D. F.	NAG 1-103	3894
29	NORTHWESTERN UNIV	Olsen, G. C.	LARC	Liu, W. K.	NAG 1-210	2446
29	OLD DOMINION UNIV	Dagenhart, J. R.	LARC	Grosch, C. E.	NAG 1-352	4847
29	PRAIRIE VIEW A&M U	Deboo, G. J.	ARC	Fuller, J. H.	NCA 2-598101	4492
29	PRAIRIE VIEW A&M U	Matsuhira, D. S.	ARC	Yeh, H. Y.	NCA 2-598102	4493
29	PRAIRIE VIEW A&M U	Brown, R. C., Jr.	ARC	Emanuel, E.	NCA 2-598103	4494
29	PRAIRIE VIEW A&M U	Camisa, J. T.	ARC	Knighton, T. G.	NCA 2-598104	4495
29	RICE UNIVERSITY	Browne, I. D.	JSC	Scott, D. W.	NCC 9-10	4514
29	SAN DIEGO STATE UNIV	Schy, A. A.	LARC	Rao, S. S.	NAG 1-275	1358
29	SAN JOSE STATE UNIV	Bowles, J. V.	ARC	Huynh, L. C.	NCC 2-216	1430
29	STANFORD UNIVERSITY	Alton, L. R.	ARC	Dunn, D. A.	NCA 2-745310	1536
29	STANFORD UNIVERSITY	Sorenson, R. L.	ARC	Steger, J. L.	NCC 2-129	1563
29	STANFORD UNIVERSITY	Olsen, G. C.	LARC	Hughes, T. J.	NAG 1-259	1443
29	STANFORD UNIVERSITY	Olsen, G. C.	LARC	Hughes, T. J.	NAG 1-361	1446
29	STEVENS INST OF TECH	Dagenhart, J. R.	LARC	Salwen, H.	NAG 1-213	3575
29	TUSKEGEE INSTITUTE	Hogge, J. E.	LARC	Hargrove, A.	NAG 1-172	1014
29	UNIV ALA-HUNTSVILLE	Thompson, W. E.	MSFC	Chan, C. H.	NAS 8-34711	1050
29	UNIV CALIF-BERKELEY	MacElroy, R. D.	ARC	Auslander, D. M.	NCC 2-257	1676
29	UNIV CALIF-BERKELEY	Wade, L.	JSC	Colwell, R. N.	NAS 9-16413	1656
29	UNIV CALIF-L ANGELES	Warming, R.	ARC	Osher, S.	NCA 2-390202	1779
29	UNIV COLORADO-BOLDR	Esenwein, G. F.	HQ-EE	Hansen, E. L.	NASW 3730	2098
29	UNIV OF CONNECTICUT	Schiess, J. R.	LARC	Roulier, J. A.	NAG 1-153	2137
29	UNIV OF DAYTON	Cagliostro, D. E.	ARC	Engler, N. A.	NAS 2-11184	4153
29	UNIV DIST COLUMBIA	Warren, L. S.	HQ-U	Darby, A. J.	NASW 3689	2248
29	UNIV ILLINOIS-URBANA	Samms, K. H.	LARC	Chien, R. T.	NAG 1-288	2517
29	UNIV ILLINOIS-URBANA	Hankins, W. W.	LARC	Chien, R. T.	NCC 1-52	2540
29	UNIV OF KANSAS	Peterson, D. L.	ARC	Martinko, E. A.	NAG 2-201	2703
29	UNIV OF KANSAS	Gupta, K. K.	ARC	Fortin, P. E.	NCC 2-251	2733
29	UNIV MARYLAND-COL PK	Paddack, S. J.	GSFC	Reggia, J. R.	NAG 5-290	2885
29	UNIV MARYLAND-COL PK	Baker, R. F.	GSFC	Seigal, A. E.	NAS 5-26639	2911
29	UNIV MO-COLUMBIA	Porter, J.	JSC	Tranter, W. H.	NAS 9-15477	3412
29	UNIV OF PENNSYLVANIA	Woolford, B. J.	JSC	Altschuler, M. D.	NAS 9-17003	4357
29	UNIV TEXAS-AUSTIN	Krishen, K.	JSC	Tucker, A. J.	NAS 9-16437	4665
29	UNIV TEXAS-AUSTIN	Pels, G. F.	JSC	Griffin, C. R.	NAS 9-16497	4666
29	UNIV OF UTAH	Singley, M. E.	MSFC	Grnderson, R. T.	NAS 8-35346	4754
29	UNIV OF WALES	Bey, K. S.	LARC	Morgan, K.	NAGW 478	5194
29	VIRGINIA POLY INST	Migneault, G. E.	LARC	Armstrong, J. R.	NAG 1-174	4946
29	WICHITA STATE UNIV	Chappelle, T.	HQ-LB	Tomayko, J. E.	NASW 3714	2748
31	ARIZONA STATE UNIV	Alexander, M. B.	MSFC	Logan, E., Jr.	NAS 8-34318	1104
31	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Greeley, R.	NSG 7548	1118
31	AUBURN UNIV-AUBURN	Shackelford, B.	MSFC	Foster, W. A., Jr.	NAS 8-33886	1009
31	AUBURN UNIV-AUBURN	Moore, R. L.	MSFC	Hinata, S.	NAS 8-35057	1011
31	AUGSBURG COLLEGE	Spencer, N. W.	GSFC	Engelbretson, M. J.	NSG 5285	3351
31	BOSTON UNIVERSITY	Guynes, B. V.	MSFC	Meudillo, M.	NAS 8-32844	2995
31	BROWN UNIVERSITY	Oseroff, H.	GSFC	Hermance, J. F.	NAS 5-26138	4387
31	CALIF INST OF TECH	Cuzzi, J. N.	ARC	Goldreich, P.	NCA 2-90301	1292
31	CALIF INST OF TECH	Cherrix, G. T.	GSFC	Ingersoll, A. P.	NAS 5-22965	1281
31	CALIF INST OF TECH	Stouffer, C.	GSFC	Zirin, H.	NAS 5-27269	1285
31	CALIF INST OF TECH	Hansen, J. E.	GSFC	Yung, Y. L.	NSG 5301	1309
31	CALIF INST OF TECH	McDougal, D. S.	LARC	Seinfeld, J. H.	NAG 1-71	1245
31	CALIF INST OF TECH	Watson, R. T.	HQ-EE	Yung, Y. L.	NAGW 413	1277
31	CALIF INST OF TECH	Brinton, H. C.	HQ-EL	Fngureoll, A.	NAGW 58	1263
31	CALIF INST OF TECH	Murphy, R. E.	HQ-EL	Farmer, C. B.	NAGW 223	1272
31	CALIF INST OF TECH	Brinton, H. C.	HQ-EL	Yung, Y. L.	NAGW 313	1276
31	CALIF INST OF TECH	Brinton, H. C.	HQ-EL	Yung, Y. L.	NSG 7376	1313
31	CAL STATE U-FULLERTN	Brinton, H. C.	HQ-EL	Ryan, J. A.	NSG 7614	1335
31	CAL STATE U-NRTHRDGE	Wende, C.	GSFC	Chapman, G. A.	NSG 5330	1346
31	CAL STATE U-NRTHRDGE	Wende, C.	GSFC	Chapman, G. A.	NSG 5333	1347
31	CITY COLLEGE OF N Y	Canuto, V. C.	GSFC	Arons, M.	NAG 5-372	3616
31	CITY U N Y-GRAD SCHL	Alexander, M. B.	MSFC	Tchen, C. H.	NAS 8-34622	3623

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
31	CLARKSON COL OF TECH	Fowles, W. W.	MSFC	Hyun, J.	NAS 8-34750	3631
31	CLEMSON UNIV-CLEMSON	Thiele, O. W.	GSFC	Ulbrich, C. W.	NAG 5-232	4404
31	CLEMSON UNIV-CLEMSON	Adler, R. F.	GSFC	Gentry, R. C.	NCC 5-27	4408
31	CLEMSON UNIV-CLEMSON	Rodgers, E. B.	GSFC	Gentry, R. C.	NSG 5349	4412
31	COLLEGE OF WM & MARY	Sullivan, E. M.	LARC	Rinsland, C. P.	NCC 1-3	4791
31	COLLEGE OF WM & MARY	Seals, R. K.	LARC	Rinsland, C. P.	NCC 1-16	4792
31	COLLEGE OF WM & MARY	Sullivan, E. M.	LARC	Benner, D. C.	NCC 1-43	4794
31	COLLEGE OF WM & MARY	Seals, R. K.	LARC	Rinsland, C. P.	NCC 1-61	4795
31	COLORADO STATE UNIV	King, M. D.	GSFC	McKee, T. B.	NAG 5-58	2032
31	COLORADO STATE UNIV	Shukla, J.	GSFC	Stevens, D. E.	NAG 5-136	2033
31	COLORADO STATE UNIV	Rodgers, E.	GSFC	Gray, W. M.	NAG 5-299	2035
31	COLORADO STATE UNIV	Keyser, D.	GSFC	Pielke, R. A.	NAG 5-359	2036
31	COLORADO STATE UNIV	Hall, J. B.	LARC	Vonderhaar, T. H.	NAS 1-16465	2039
31	COLUMBIA UNIVERSITY	Travis, L.	GSFC	Broecker, W. S.	NCC 5-16	3654
31	COLUMBIA UNIVERSITY	Travis, L. D.	GSFC	Broecker, W. S.	NCC 5-29	3657
31	CORNELL UNIVERSITY	Chandra, S.	HQ-EE	Farley, D. T.	NAGW 362	3686
31	CORNELL UNIVERSITY	Brinton, H. C.	HQ-EL	Sagan, C.	NGL 33-010-082	3695
31	CORNELL UNIVERSITY	Brinton, H. C.	HQ-EL	Gierasch, P. J.	NGL 33-010-186	3697
31	CORNELL UNIVERSITY	Brinton, H. C.	HQ-EL	Gierasch, P. J.	NSG 7612	3718
31	DARTMOUTH COLLEGE	Ippolito, L.	HQ-EC	Crane, R. K.	NASW 3645	3486
31	DREXEL UNIVERSITY	Farlow, N. H.	ARC	Friend, J. P.	NAG 2-10	4252
31	DREXEL UNIVERSITY	Kyle, H. L.	GSFC	House, F. B.	NAS 5-26794	4263
31	DREXEL UNIVERSITY	Fuller, W. H., Jr.	LARC	Friend, J. P.	NAG 1-200	4247
31	DREXEL UNIVERSITY	Sullivan, E. M.	LARC	House, F. B.	NAS 1-14393	4260
31	DREXEL UNIVERSITY	Hall, J. B., Jr.	LARC	House, F. B.	NAS 1-16428	4261
31	DREXEL UNIVERSITY	Allario, F.	LARC	Abbas, M. M.	NCC 1-33	4265
31	DREXEL UNIVERSITY	Wilson, G. S.	MSFC	S'cnafer, A.	NAS 8-34833	4264
31	DREXEL UNIVERSITY	Hilsenrath, E.	HQ-EE	Abbas, M. M.	NAGW 431	4259
31	DUKE UNIVERSITY	Watson, R. T.	HQ-EB	Delucia, F. C.	NSG 7540	3881
31	FLORIDA STATE UNIV	Susskind, J.	GSFC	Krishnamurti, T. N.	NAG 5-6	2261
31	FLORIDA STATE UNIV	Chou, S. H.	GSFC	Stage, S. A.	NAG 5-332	2263
31	FLORIDA STATE UNIV	Watson, R. T.	HQ-EB	Hunt, R. H.	NASW 3522	2265
31	FLORIDA STATE UNIV	Watson, R. T.	HQ-EE	Hunt, R. H.	NSG 7473	2269
31	FLORIDA STATE UNIV	Brinton, H. C.	HQ-EL	Hess, S. L.	NSG 7629	2270
31	GEORGE WASHINGTON U	Sullivan, E. M.	LARC	Liebowitz, H.	NCC 1-19	2203
31	GEORGE WASHINGTON U	Callis, L. B.	LARC	Liebowitz, H.	NCC 1-39	2207
31	GEORGE WASHINGTON U	Smith, G. L.	LARC	Liebowitz, H.	NSG 1555	2215
31	GEORGIA INST OF TECH	Young, R. E.	ARC	Alyea, F. N.	NCC 2-9	2378
31	GEORGIA INST OF TECH	Margozzi, A. P.	ARC	Grams, G. W.	NSG 2363	2385
31	GEORGIA INST OF TECH	Donley, J.	GSFC	Cunnold, D.	NAS 5-27264	2368
31	GEORGIA INST OF TECH	Browell, E. V.	LARC	Davis, D. D.	NAG 1-50	2339
31	GEORGIA INST OF TECH	Reichle, H. G.	LARC	Chameides, W. L.	NAG 1-85	2340
31	GEORGIA INST OF TECH	Reichle, H. G., Jr.	LARC	Chameides, W. L.	NAG 1-385	2343
31	GEORGIA INST OF TECH	McMaster, L. R.	LARC	Grams, G. W.	NAS 1-16356	2360
31	GEORGIA INST OF TECH	McMaster, L. R.	LARC	Cunnold, D. M.	NAS 1-16357	2361
31	GEORGIA INST OF TECH	McMaster, L. R.	LARC	Cunnold, D. M.	NAS 1-17150	2364
31	GEORGIA INST OF TECH	McMaster, L. R.	LARC	Grams, G. W.	NSG 1493	2382
31	GEORGIA INST OF TECH	McMaster, L. R.	LARC	Cunnold, D. M.	NSG 1643	2383
31	HAMPSHIRE COLLEGE	Master, L. R.	HQ-EL	McElroy, G. B.	NAGW 417	3007
31	HAMPTON INSTITUTE	Brinton, H. C.	LARC	Venable, D. D.	NAG 1-87	4807
31	HARVARD UNIVERSITY	Whitlock, C. H.	GSFC	McElroy, M. B.	NAS 5-24134	3021
31	HARVARD UNIVERSITY	Bullock, G. D.	GSFC	Parkinson, W. H.	NAS 5-26557	3023
31	HARVARD UNIVERSITY	Lundholm, J.	GSFC	Anderson, J. G.	NAS 6-3061	3026
31	HARVARD UNIVERSITY	Ballance, C. W.	LARC	McElroy, M. B.	NAG 1-55	3008
31	HARVARD UNIVERSITY	Fishman, J.	HQ-EB	McElroy, M. B.	NSG 2031	3036
31	HARVARD UNIVERSITY	Chandra, S.	HQ-EE	Anderson, J. G.	NASW 3242	3029
31	HARVARD UNIVERSITY	Watson, R. T.	HQ-EL	Goody, R. M.	NGL 22-007-228	3033
31	HARVARD UNIVERSITY	Brinton, H. C.	HQ-EL	Jackson, W. M.	NAGW 446	2234
31	HOWARD UNIVERSITY	Brinton, H. C.	HQ-EL	Jackson, W. M.	NSG 5071	2245
31	IOWA STATE UNIV	Shukla, J.	GSFC	Chen, T. C.	NAG 5-104	2638

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31	IOWA STATE UNIV	Baker, W.	GSFC	Chen, T. C.	NAG 5-355	2640
31	JACKSON STATE UNIV	Cody, R.	GSFC	Perkins, J.	NAG 5-158	3384
31	JOHNS HOPKINS UNIV	Susskind, J.	GSFC	Phillips, O. M.	NAG 5-200	2813
31	JOHNS HOPKINS UNIV	Bullock, G. D.	GSFC	Doering, J. P.	NAS 5-11415	2824
31	LEHIGH UNIVERSITY	Boese, R. W.	ARC	Lovejoy, R. W.	NCA 2-380201	4276
31	LEHIGH UNIVERSITY	Boese, R. W.	ARC	Lovejoy, R. W.	NCA 2-380301	4277
31	MASS INST OF TECH	Whitten, R. C.	ARC	Prinn, R. G.	NSG 2010	3188
31	MASS INST OF TECH	Susskind, J.	GSFC	Eaton, J. K.	NAG 5-10	3095
31	MASS INST OF TECH	Shukla, J.	GSFC	Eagleson, P. S.	NAG 5-134	3100
31	MASS INST OF TECH	Shukla, J.	GSFC	Stone, P. H.	NAG 5-137	3101
31	MASS INST OF TECH	Halem, M.	GSFC	Stone, P. H.	NGR 22-009-727	3179
31	MASS INST OF TECH	Rind, D.	GSFC	Stone, P. H.	NSG 5113	3199
31	MASS INST OF TECH	Halem, M.	GSFC	Charney, J. G.	NSG 5166	3200
31	MASS INST OF TECH	Reichle, H. G.	LARC	Newell, R. E.	NAG 1-92	3048
31	MASS INST OF TECH	Reichle, H. G.	LARC	Newell, R. E.	NAG 1-292	3056
31	MASS INST OF TECH	Watson, R. T.	HQ-EE	Prinn, R. G.	NAGW 474	3131
31	MASS INST OF TECH	Murphy, R. E.	HQ-EL	Elliot, J. E.	NAGW 68	3116
31	MASS INST OF TECH	Ando, K.	HQ-EL	Binsack, J. H.	NSG 7638	3209
31	MOREHOUSE COLLEGE	Chandra, S.	HQ-EB	Hall, J. H., Jr.	NAGW 259	2391
31	MORGAN STATE UNIV	Laughlin, C. R.	GSFC	Knox, N.	NAG 5-14	2848
31	MORGAN STATE UNIV	Duncan, C. H.	GSFC	Oliver, F. W.	NSG 5401	2852
31	NEW MEX INST MINING	Vaughan, O. H.	MSFC	Brooks, M.	NAS 8-33817	3580
31	NEW MEX ST U-LAS CR	Brinton, H. C.	HQ-EL	Beebe, R. F.	NAGW 167	3585
31	NEW YORK UNIVERSITY	Halem, M.	GSFC	Isaacson, E.	NAG 5-341	3730
31	NEW YORK UNIVERSITY	Halem, M.	GSFC	Isaacson, E.	NSG 5034	3742
31	NEW YORK UNIVERSITY	Halem, M.	GSFC	Ghil, M.	NSG 5130	3743
31	NO CAROLINA STATE U	Heppner, J. P.	GSFC	Manning, E. R.	NAS 5-26510	3905
31	OHIO STATE UNIV	Hilsenrath, E.	HQ-EE	Shaw, J. H.	NSG 7479	4106
31	OKLAHOMA STATE UNIV	Tuyahov, A. J.	HQ-EL	Walsh, S. J.	NSG 7640	4192
31	OLD DOMINION UNIV	Suttles, J. T.	LARC	Tiwari, S. N.	NAG 1-21	4821
31	OLD DOMINION UNIV	Harriss, R. C.	LARC	Kindle, E. C.	NAG 1-266	4838
31	OLD DOMINION UNIV	Orr, H. D.	LARC	Kindle, E. C.	NCC 1-2	4856
31	OLD DOMINION UNIV	Browell, E. V.	LARC	Kindle, E. C.	NCC 1-28	4857
31	OLD DOMINION UNIV	Levine, J. S.	LARC	Tiwari, S. N.	NCC 1-30	4858
31	OREGON GRADUATE CTR	Reichle, H. G.	LARC	Rasmussen, R. A.	NAG 1-160	4203
31	OREGON GRADUATE CTR	Mugler, J. P.	LARC	Rasmussen, R. A.	NAG 1-382	4204
31	OREGON GRADUATE CTR	Watson, R. T.	HQ-EE	Rasmussen, R. A.	NAGW 280	4206
31	OREGON STATE UNIV	Peterson, D. L.	ARC	Schrumpf, B. J.	NCA 2-586301	4221
31	OREGON STATE UNIV	Shukla, J.	GSFC	Deardorff, J. W.	NAG 5-51	4214
31	OREGON STATE UNIV	Shukla, J.	GSFC	Gates, W. L.	NAG 5-206	4215
31	OREGON STATE UNIV	Halem, M.	GSFC	Gates, W. L.	NSG 5353	4224
31	PENN STATE U-UNIV PK	Toon, O. B.	ARC	Carlson, T. N.	NCA 2-589201	4327
31	PENN STATE U-UNIV PK	Pfister, L.	ARC	Warner, T. T.	NCA 2-589301	4328
31	PENN STATE U-UNIV PK	Susskind, J.	GSFC	Herman, R. M.	NAG 5-303	4301
31	PENN STATE U-UNIV PK	Schmidlin, F. J.	GSFC	Olivero, J. J.	NAG 5-606	4305
31	PENN STATE U-UNIV PK	Oseroff, H.	GSFC	Carlson, T. N.	NAS 5-26456	4314
31	PENN STATE U-UNIV PK	Duke, J. R.	GSFC	Olivero, J.	NAS 6-2726	4319
31	PENN STATE U-UNIV PK	Uccellini, L. W.	GSFC	Warner, T.	NSG 5205	4346
31	PENN STATE U-UNIV PK	Kaufman, J. W.	MSFC	Clark, J. H.	NAS 8-33794	4320
31	PENN STATE U-UNIV PK	Fichtl, G. H.	MSFC	Clark, J. H.	NAS 8-33797	4321
31	PENN STATE U-UNIV PK	Brinton, H. C.	HQ-EL	Herman, R. M.	NAGW 127	4309
31	PRINCETON UNIVERSITY	Owens, F. C.	HQ-LB	Bryan, K.	NGT 31-001-800	3555
31	PURDUE UNIVERSITY	Curran, R. J.	GSFC	Davies, R.	NAG 5-101	2593
31	PURDUE UNIVERSITY	Shukla, T.	GSFC	Davies, R.	NAG 5-106	2594
31	PURDUE UNIVERSITY	Fichtl, G. H.	MSFC	Smith, P. J.	NAS 8-34009	2603
31	RENSSELAER POLY-NY	Schaefer, D. A.	MSFC	Wiedemeier, H.	NAS 8-33562	3770
31	RICE UNIVERSITY	Spencer, N. W.	GSFC	Reiff, P. H.	NSG 5286	4522
31	RICE UNIVERSITY	Quaide, W. L.	HQ-EL	Michel, F. C.	NSG 7032	4523
31	RICE UNIVERSITY	Brinton, H. C.	HQ-EL	Chamberlain, J. W.	NSG 7043	4524
31	RICE UNIVERSITY	Brinton, H. C.	HQ-EL	Stebbing, R. F.	NSG 7386	4526

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31	ST LOUIS UNIVERSITY	Hill, K.	MSFC	Fuelburg, H. E.	NAS 8-33370	3406
31	ST LOUIS UNIVERSITY	Wilson, G. S.	MSFC	Fuelberg, H. E.	NAS 8-35330	3407
31	ST LOUIS UNIVERSITY	Owens, F. C.	HQ-LB	Fuelberg, H. E.	NGT 26-006-800	3408
31	SAN DIEGO STATE UNIV	Brinton, H. C.	HQ-EL	Young, L.	NAGW 184	1361
31	SAN DIEGO STATE UNIV	Brinton, H. C.	HQ-EL	Young, A. T.	NAGW 250	1363
31	SAN JOSE STATE UNIV	Toon, O. B.	ARC	Riegel, C. A.	NCC 2-68	1407
31	SAN JOSE STATE UNIV	Danielson, E. F.	ARC	Riegel, C. A.	NCC 2-73	1409
31	SAN JOSE STATE UNIV	Pollack, J.	ARC	Riegel, C. A.	NCC 2-132	1415
31	SAN JOSE STATE UNIV	Vedder, J. F.	ARC	Goodman, J.	NCC 2-168	1424
31	SAN JOSE STATE UNIV	Pollack, J. B.	ARC	Riegel, C. A.	NCC 2-183	1425
31	SAN JOSE STATE UNIV	Chan, K. L.	ARC	Riegel, C.	NCC 2-211	1429
31	SAN JOSE STATE UNIV	Wielicki, B. A.	LARC	Welch, R. M.	NAG 1-307	4417
31	SO DAKOTA SCHL MINES	Carter, D. J., Jr.	LARC	Scott, R. L.	NAS 1-15335	2789
31	SO UNIV & A&M COL-BR	Guynes, B. V.	MSFC	Darosa, A. V.	NAS 8-32852	1502
31	STANFORD UNIVERSITY	Decher, R.	MSFC	Everitt, C. W.	NAS 8-33796	1504
31	STANFORD UNIVERSITY	Chappell, C. R.	MSFC	Banks, P. M.	NAS 8-34430	1505
31	STANFORD UNIVERSITY	Stone, N. H.	MSFC	Banks, P. M.	NAS 8-35502	1509
31	STANFORD UNIVERSITY	Brinton, H. C.	HQ-EL	Eshleman, V. R.	NGL 05-020-014	1581
31	STATE UNIV NY-ALBANY	Margozzi, A. P.	ARC	Kritz, M. A.	NAG 2-230	3783
31	STATE UNIV NY-ALBANY	Russell, P.	ARC	Kritz, M.	NCA 2-748301	3798
31	STATE UNIV NY-ALBANY	Lawless, J. G.	ARC	Kritz, M.	NCA 2-748302	3799
31	STATE UNIV NY-ALBANY	Margozzi, A. P.	ARC	Lazrus, A. L.	NSG 2386	3800
31	STATE UNIV NY-ALBANY	Whitehead, V.	JSC	Duggin, M. J.	NAS 9-16331	3793
31	STATE UNIV NY-ALBANY	Mugler, J. P., Jr.	LARC	Mohnen, V. A.	NAG 1-365	3782
31	STATE UNIV NY-ALBANY	Christian, H. J.	MSFC	Orville, R. E.	NAS 8-33380	3791
31	ST U NY COL-PURCHASE	Halem, M.	GSFC	Tenenbaum, J.	NSG 5077	3858
31	STATE U NY-STONY BRK	Chang, S.	ARC	Owens, T.	NCA 2-760101	3836
31	STATE U NY-STONY BRK	Chang, S.	ARC	Owen, T.	NCA 2-760301	3837
31	STATE U NY-STONY BRK	Stewart, R. W.	GSFC	Hogan, J. S.	NCC 5-7	3839
31	STATE U NY-STONY BRK	Hansen, J. E.	GSFC	Owen, T.	NCC 5-23	3840
31	STATE U NY-STONY BRK	Hall, J. B., Jr.	LARC	Heeger, A. J.	NAS 1-16444	3831
31	STATE U NY-STONY BRK	Chandra, S.	HQ-EB	Soloman, P. M.	NAGW 353	3829
31	STATE U NY-STONY BRK	Brinton, H. C.	HQ-EL	Caldwell, J. J.	NAGW 160	3828
31	STATE U NY-STONY BRK	Brinton, H. C.	HQ-EL	Varanasi, P.	NGR 33-015-139	3842
31	STATE U NY-STONY BRK	Whitehead, V.	JSC	Franceschini, G.	NAS 9-16601	4579
31	TEXAS A&M UNIVERSITY	Turner, R. E.	MSFC	Scoggins, J. R.	NAS 8-33776	4561
31	TEXAS A&M UNIVERSITY	Turner, R. E.	MSFC	Scoggins, J. R.	NAS 8-34133	4562
31	TEXAS A&M UNIVERSITY	Turner, R. E.	MSFC	Scoggins, J. R.	NAS 8-34532	4564
31	TEXAS A&M UNIVERSITY	Turner, R. E.	MSFC	Scoggins, J. R.	NAS 8-34735	4566
31	TEXAS A&M UNIVERSITY	Arnold, J. E.	MSFC	Huebner, G. L.	NAS 8-34972	4568
31	TEXAS A&M UNIVERSITY	Arnold, J. E.	MSFC	Thompson, A. H.	NAS 8-35182	4570
31	TEXAS A&M UNIVERSITY	Kaufman, J. W.	MSFC	Kattawar, G. W.	NGR 44-001-117	4593
31	TEXAS A&M UNIVERSITY	Brinton, H. C.	HQ-EL	Kattawar, G. W.	NAS 8-32818	1030
31	UNIV ALA-HUNTSVILLE	Urban, E. W.	MSFC	Hendricks, J. B.	NAS 8-33525	1033
31	UNIV ALA-HUNTSVILLE	Hagyard, D. J.	MSFC	Krall, K. R.	NAS 8-33526	1034
31	UNIV ALA-HUNTSVILLE	Tandberghanssen, E.	MSFC	Wu, S. T.	NAS 8-33809	1038
31	UNIV ALA-HUNTSVILLE	Decher, R.	MSFC	Karr, G. R.	NAS 8-33812	1041
31	UNIV ALA-HUNTSVILLE	Owen, R. B.	MSFC	Riley, C.	NAS 8-34137	1045
31	UNIV ALA-HUNTSVILLE	Fishman, G. J.	MSFC	Paciesas, W. S.	NAS 8-34953	1051
31	UNIV ALA-HUNTSVILLE	Richards, L. O.	MSFC	Wu, S. T.	NAS 8-35052	1053
31	UNIV ALA-HUNTSVILLE	Forsythe, D. J.	MSFC	Chung, T. J.	NAS 8-35663	1059
31	UNIV ALA-HUNTSVILLE	Smith, O. E.	MSFC	Karr, G. P.	NAS 8-33507	1067
31	UNIV ALA-UNIVERSITY	Peters, P. N.	MSFC	Bertsch, W.	NAS 5-27428	1075
31	UNIV ALASKA-FAIRBNKS	Milliner, C. F.	GSFC	Brown, N. B.	NAS 6-3065	1076
31	UNIV ALASKA-FAIRBNKS	Milliner, C. F.	GSFC	Brown, N. B.	NAS 2-9487	1176
31	UNIV OF ARIZONA	Fimmel, R. O.	ARC	Hunten, D. M.	NAG 5-143	1135
31	UNIV OF ARIZONA	Wolff, C. L.	GSFC	Hill, H. A.	NAG 5-340	1140
31	UNIV OF ARIZONA	Wolff, C. L.	GSFC	Hill, H. A.	NAS 5-25484	1179
31	UNIV OF ARIZONA	Fellerman, K.	GSFC	Smith, B. A.	NAS10-10082	1198
31	UNIV OF ARIZONA	Dietz, W. R.	KSC	Krider, E. P.	NAS 8-33815	1189
31	UNIV OF ARIZONA	Fowlis, W. W.	MSFC	Gall, R. L.		

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
31	UNIV OF ARIZONA	Christian, H. J.	MSFC	Krider, E. P.	NAS 8-34734	1190
31	UNIV OF ARIZONA	Butler, D. M.	HQ-EE	Hunten, D. M.	NSG 7485	1231
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Sil, G. T.	NAGW 67	1152
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Hunten, D. M.	NAGW 149	1157
31	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Brown, R. A.	NAGW 262	1165
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Tomasko, M.	NAGW 331	1167
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Lewis, J. S.	NAGW 340	1169
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Kumar, S.	NAGW 500	1174
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Hunten, D. M.	NSG 7558	1234
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Tomasko, M. G.	NSG 7573	1235
31	UNIV ARKANSAS-FAYETV	Smith, O. E.	MSFC	Tubbs, J. D.	NAS 8-34502	1243
31	UNIV ARKANSAS-LTL RK	Ragent, B.	ARC	Mazumder, M. K.	NAG 2-147	1244
31	UNIV CALIF-BERKELEY	Cassen, P. M.	ARC	Shu, F.	NCA 2-50203	1663
31	UNIV CALIF-BERKELEY	Spencer, N. W.	GSFC	Bowyer, S.	NAG 5-139	1617
31	UNIV CALIF-BERKELEY	Jones, C. T.	MSFC	Bowyer, S.	NAS 8-32577	1655
31	UNIV CALIF-DAVIS	Fitzgarraird, D. E.	MSFC	Carroll, J. J.	NAS 8-34730	1706
31	UNIV CALIF-IRVINE	Watson, R. T.	HQ-EB	Molina, M. J.	NSG 7208	1734
31	UNIV CALIF-IRVINE	Watson, R. T.	HQ-EE	Rowland, F. S.	NAGW 452	1729
31	UNIV CALIF-IRVINE	Watson, R. T.	HQ-EE	Rowland, F. S.	NAGW 467	1730
31	UNIV CALIF-L ANGELES	Fimmel, R. O.	ARC	Russell, C. T.	NAS 2-9491	1768
31	UNIV CALIF-L ANGELES	Ehernberger, L. J.	DFRF	Wurtele, M. G.	NSG 4024	1799
31	UNIV CALIF-L ANGELES	Halem, M.	GSFC	Suarez, J.	NGR 05-007-328	1791
31	UNIV CALIF-L ANGELES	Woods, D. C.	LARC	Friedlander, S. K.	NAS 1-16674	1767
31	UNIV CALIF-L ANGELES	Brinton, H. C.	HQ-EL	Siscoe, G. L.	NAGW 87	1759
31	UNIV CALIF-L ANGELES	Brinton, H. C.	HQ-EL	Schubert, G.	NSG 7164	1805
31	UNIV CALIF-L ANGELES	Brinton, H. C.	HQ-EL	Kivelson, M. G.	NSG 7295	1806
31	UNIV CALIF-SAN DIEGO	Shukla, J.	GSFC	Roads, J. O.	NAG 5-105	1821
31	UNIV CALIF-SAN DIEGO	Baker, W.	GSFC	Somerville, R. C.	NAG 5-236	1825
31	UNIV CALIF-SAN DIEGO	Sullivan, E. M.	LARC	Cicerone, R. J.	NAG 1-77	1814
31	UNIV CALIF-SAN DIEGO	Chappell, C. R.	MSFC	Canfield, R. C.	NAS 8-33795	1860
31	UNIV CALIF-SAN DIEGO	Parnell, T. A.	MSFC	Whipple, E. C.	NAS 8-35012	1861
31	UNIV CALIF-SAN DIEGO	Murphy, R. E.	HQ-EL	Whipple, E. C.	NAGW 225	1841
31	UNIV OF CHICAGO	Kalnay, E.	GSFC	Kuo, H. L.	NAG 5-129	2472
31	UNIV OF CHICAGO	Adams, R.	MSFC	Myers, P.	NAS 8-32828	2491
31	UNIV OF CHICAGO	Fitzjarraird, D. E.	MSFC	Srivastava, R. C.	NAS 8-34770	2492
31	UNIV OF CHICAGO	Dodge, J. C.	HQ-EE	Fujita, T. T.	NGR 14-001-008	2503
31	UNIV OF CHICAGO	Kaluzienski, L. J.	HQ-EZ	Muller, D.	NSG 7464	2511
31	UNIV COLORADO-BOLDR	Zwally, H. J.	GSFC	Barry, R. G.	NAG 5-142	2058
31	UNIV COLORADO-BOLDR	Mentall, J. E.	GSFC	Mount, G. H.	NAG 5-212	2062
31	UNIV COLORADO-BOLDR	Bullock, G. D.	GSFC	Stewart, A. I.	NAS 5-11405	2082
31	UNIV COLORADO-BOLDR	Browne, W. E.	GSFC	Rottman, G. J.	NAS 5-26172	2084
31	UNIV COLORADO-BOLDR	Reber, C. A.	GSFC	London, J.	NAS 5-26303	2085
31	UNIV COLORADO-BOLDR	Donley, J.	GSFC	London, J.	NAS 5-27263	2089
31	UNIV COLORADO-BOLDR	Browne, W.	GSFC	Rottman, G.	NAS 5-27750	2094
31	UNIV COLORADO-BOLDR	Frederick, J. E.	GSFC	London, J.	NSG 5153	2108
31	UNIV COLORADO-BOLDR	Wende, C.	GSFC	Gebbie, K. B.	NSG 5318	2112
31	UNIV COLORADO-BOLDR	Jones, C. T.	MSFC	Hart, J. E.	NAS 8-31958	2095
31	UNIV COLORADO-BOLDR	Rosendhal, J. D.	HQ-E	Nelson, L. D.	NAGW 404	2079
31	UNIV COLORADO-BOLDR	Chandra, S.	HQ-EE	Rusch, D. W.	NAGW 292	2073
31	UNIV COLORADO-BOLDR	Watson, R. T.	HQ-EE	Thomas, R. J.	NSG 7231	2114
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	West, R. A.	NAGW 156	2070
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Hord, C. W.	NAGW 197	2071
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Timothy, J. G.	NAGW 343	2074
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Barth, C.	NAGW 358	2075
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Esposito, L.	NAGW 389	2077
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Jakosky, B. M.	NAGW 495	2080
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Barth, C. A.	NGL 06-003-052	2104
31	UNIV OF CONNECTICUT	Halem, M.	GSFC	Bock, P.	NSG 5075	2145
31	UNIV OF CONNECTICUT	Halem, M.	GSFC	Lin, J. D.	NSG 5346	2146
31	UNIV OF DAYTON	Schmidlin, F. J.	GSFC	Luers, J. K.	NAS 6-3086	4154

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31	UNIV OF DAYTON	Camp, D. W.	MSFC	Luers, J. K.	NAS 8-34687	4157
31	UNIV OF DELAWARE	Shukla, J.	GSFC	Willmott, C. J.	NAG 5-107	2168
31	UNIV OF DENVER	Margozzi, A.	ARC	Murcray, D. G.	NAS 2-11186	2126
31	UNIV OF DENVER	Goad, J. H.	LARC	Goldman, A.	NAG 1-56	2122
31	UNIV OF DENVER	McMaster, L. R.	LARC	Murcray, D. G.	NAS 1-16306	2125
31	UNIV OF DENVER	Seals, R. K., Jr.	LARC	Goldman, A.	NCC 1-48	2132
31	UNIV OF DENVER	Watson, R. T.	HQ-EE	Murcray, D. G.	NAGW 479	2124
31	UNIV OF FLORIDA	Wilhelmi, A. J.	ARC	Lanzerotti, L. J.	NAS 2-9976	2289
31	UNIV OF FLORIDA	Oseroff, H.	GSFC	Allen, L. H.	NAS 5-26453	2293
31	UNIV OF FLORIDA	Withrow, R.	KSC	Martsoff, J. D.	NAS10-9892	2296
31	UNIV OF FLORIDA	Brinton, H. C.	HQ-EL	Weinberg, J. L.	NAGW 126	2285
31	UNIV OF FLORIDA	Brunk, W. E.	HQ-EL	Carr, T. D.	NAGW 320	2287
31	UNIV OF HAWAII-MANOA	Quaide, W. L.	HQ-EL	Singer, R. B.	NSG 7590	2431
31	UNIV ILLINOIS-URBANA	Rodgers, E. B.	GSFC	Kidder, S. Q.	NAG 5-132	2529
31	UNIV ILLINOIS-URBANA	Wende, C.	GSFC	Mouschovias, T. C.	NSG 5319	2548
31	UNIV ILLINOIS-URBANA	Fichil, G. A.	MSFC	Achtemeier, G.	NAS 8-34902	2537
31	UNIV ILLINOIS-URBANA	Hilsenrath, E.	HQ-EE	Bowhill, S. A.	NSG 7506	2550
31	UNIV OF IOWA	Wende, C. D.	GSFC	Calvert, W.	NAG 5-153	2661
31	UNIV OF IOWA	Wales, R. O.	GSFC	Frank, L. A.	NAS 5-26257	2678
31	UNIV OF IOWA	Talley, D.	MSFC	Shawhan, S. D.	NAS 8-32807	2685
31	UNIV OF KANSAS	Paris, J. F.	JSC	Ulaby, F. T.	NAS 9-15421	2719
31	UNIV OF KENTUCKY	Reichle, H. G., Jr.	LARC	Peters, L. K.	NSG 1424	2763
31	UNIV MARYLAND-COL PK	Margozzi, A. P.	ARC	Zoller, W. H.	NAG 2-28	2861
31	UNIV MARYLAND-COL PK	Halem, M.	GSFC	Baer, F.	NAG 5-26	2865
31	UNIV MARYLAND-COL PK	Friskey, J. L.	GSFC	Currie, D. G.	NAG 5-90	2867
31	UNIV MARYLAND-COL PK	Ramapriyan, H. K.	GSFC	Kanal, L. N.	NAG 5-154	2871
31	UNIV MARYLAND-COL PK	Fraser, R. S.	GSFC	Pinker, R. T.	NAG 5-203	2873
31	UNIV MARYLAND-COL PK	Halem, M.	GSFC	Rodenhuis, D. R.	NAG 5-215	2874
31	UNIV MARYLAND-COL PK	Halem, M.	GSFC	Thompson, O. E.	NAG 5-292	2886
31	UNIV MARYLAND-COL PK	Thiele, O. W.	GSFC	Baer, F.	NAG 5-309	2887
31	UNIV MARYLAND-COL PK	Fellerman, K.	GSFC	Currie, D. S.	NAS 5-25486	2905
31	UNIV MARYLAND-COL PK	Neil, E. A.	GSFC	Gal-chen, T.	NAS 5-26463	2909
31	UNIV MARYLAND-COL PK	Neil, E. A.	GSFC	Baer, F.	NAS 5-26883	2919
31	UNIV MARYLAND-COL PK	Neil, E. A.	GSFC	Baer, F.	NAS 5-27612	2921
31	UNIV MARYLAND-COL PK	Howell, D.	GSFC	Agrawala, A.	NAS 5-27704	2923
31	UNIV MARYLAND-COL PK	Donn, B.	GSFC	Trasco, J. D.	NGL 21-002-033	2936
31	UNIV MARYLAND-COL PK	Hartle, R. E.	GSFC	Matthews, D. L.	NGR 21-002-096	2940
31	UNIV MARYLAND-COL PK	Neil, E. A.	GSFC	Thompson, O. E.	NSG 5209	2970
31	UNIV MARYLAND-COL PK	Bullock, G.	GSFC	Kundu, M. R.	NSG 5320	2972
31	UNIV MARYLAND-COL PK	Harriss, R. C.	LARC	Zoller, W. H.	NAG 1-364	2859
31	UNIV MARYLAND-COL PK	Browell, E. V.	LARC	Wilkerson, T. D.	NCC 1-25	2931
31	UNIV MARYLAND-COL PK	Chai, A. T.	LERC	Gammon, R. W.	NAG 3-470	2863
31	UNIV MARYLAND-COL PK	Decher, R.	MSFC	Alley, C. O.	NAS 8-33798	2925
31	UNIV MARYLAND-COL PK	Urban, E. W.	MSFC	Paik, H. J.	NAS 8-33822	2926
31	UNIV OF MIAMI	Szajna, E. F.	GSFC	Gordon, H. R.	NAS 5-22963	2313
31	UNIV OF MIAMI	Fishman, J.	LARC	Gidel, L. T.	NAG 1-207	2308
31	UNIV OF MIAMI	Fowles, W. W.	MSFC	Pitcher, E. J.	NAS 8-33523	2317
31	UNIV MICH-ANN ARBOR	Carle, G. C.	ARC	Wise, D.	NCA 2-440302	3330
31	UNIV MICH-ANN ARBOR	Reed, E. I.	GSFC	Horvath, J. J.	NAG 5-230	3288
31	UNIV MICH-ANN ARBOR	Hedin, A. E.	GSFC	Carignan, G. R.	NAS 5-11376	3307
31	UNIV MICH-ANN ARBOR	Spencer, N. W.	GSFC	Carignan, G. R.	NAS 5-11380	3308
31	UNIV MICH-ANN ARBOR	Bullock, G. D.	GSFC	Hays, P. B.	NAS 5-23006	3309
31	UNIV MICH-ANN ARBOR	Bullock, G. D.	GSFC	Walker, J. C.	NAS 5-24331	3310
31	UNIV MICH-ANN ARBOR	Spencer, N. W.	GSFC	Carignan, G. R.	NAS 5-25002	3311
31	UNIV MICH-ANN ARBOR	Spencer, N. W.	GSFC	Carignan, G. R.	NAS 5-25031	3312
31	UNIV MICH-ANN ARBOR	Niemann, H.	GSFC	Carignan, G. R.	NAS 5-25145	3314
31	UNIV MICH-ANN ARBOR	Niemann, H.	GSFC	Carignan, G. R.	NAS 5-25153	3315
31	UNIV MICH-ANN ARBOR	Brown, W. H., Jr.	GSFC	Hays, P. B.	NAS 5-26169	3319
31	UNIV MICH-ANN ARBOR	Brace, L. H.	GSFC	Nagy, A. F.	NAS 5-26678	3320
31	UNIV MICH-ANN ARBOR	Browne, W.	GSFC	Hays, P.	NAS 5-27751	3323

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31	UNIV MICH-ANN ARBOR	Reed, E. I.	GSFC	Stedman, D. H.	NSG 5189	3341
31	UNIV MICH-ANN ARBOR	Sullivan, E. M.	LARC	Drayson, S. R.	NAG 1-93	3278
31	UNIV MICH-ANN ARBOR	Russell, J. M., III	LARC	Drayson, S. R.	NAS 1-14394	3300
31	UNIV MICH-ANN ARBOR	Smith, G. L.	LARC	Bartman, F. L.	NCC 1-76	3331
31	UNIV MICH-ANN ARBOR	Watson, R. T.	HQ-EE	Meriwether, J. W.	NAGW 32	3294
31	UNIV MICH-ANN ARBOR	Brinton, H. C.	HQ-EL	Cravens, T. E.	NAGW 15	3292
31	UNIV MICH-ANN ARBOR	Brinton, H. C.	HQ-EL	Cravens, T. E.	NAGW 312	3298
31	UNIV MICH-ANN ARBOR	Brinton, H. C.	HQ-EL	Atreya, S. K.	NSG 7404	3343
31	U MINN-MNPLS-ST PAUL	Margozzi, A. P.	ARC	Wilson, J. C.	NAG 2-31	3357
31	U MINN-MNPLS-ST PAUL	Bullock, G.	GSFC	Nier, A. O.	NAS 5-11438	3368
31	U MINN-MNPLS-ST PAUL	Beswick, A. G.	LARC	Mauersberger, K.	NSG 1431	3378
31	U MINN-MNPLS-ST PAUL	Brinton, H. C.	HQ-EL	Nier, A. O.	NGL 24-005-009	3374
31	UNIV MISS-UNIVERSITY	Christian, H. J.	MSFC	Marshall, T. C.	NAS 8-35183	3404
31	UNIV MO-COLUMBIA	Smith, R. C.	MSFC	Kassner, J. L., Jr.	NAS 8-31849	3411
31	UNIV MO-ROLLA	Smith, R. E.	MSFC	Hagen, D. E.	NAS 8-32976	3421
31	UNIV NEBRASKA-LINCLN	Brinton, H. C.	HQ-EL	Samson, J. A.	NGR 28-004-021	3469
31	UNIV NEVADA-DRI	Bilbro, J. W.	MSFC	Telford, J. W.	NAS 8-34685	3473
31	UNIV NEVADA-DRI	Fitzjarrald, D. E.	MSFC	Telford, J. W.	NAS 8-34731	3474
31	UNIV OF NEVADA-RENO	Fogle, V.	MSFC	Hallett, T.	NAS 8-34605	3478
31	UNIV OF NEW MEXICO	Quaide, W. L.	HQ-EL	Keil, K.	NSG 7579	3606
31	UNIV OKLAHOMA-NORMAN	Uccellini, L. W.	GSFC	Gal-chen, T.	NAG 5-283	4198
31	UNIV OKLAHOMA-NORMAN	Koch, S. E.	GSFC	Sasaki, Y. K.	NAG 5-289	4199
31	UNIV OKLAHOMA-NORMAN	Fitzjarrald, D. E.	MSFC	Doviak, R. J.	NAS 8-34749	4201
31	UNIV OREGON-EUGENE	Kakar, R. K.	HQ-EE	Nolt, I. G.	NAGW 222	4226
31	UNIV OF PITTSBURGH	Brinton, H. C.	HQ-EL	Fite, W. L.	NGL 39-011-013	4370
31	UNIV OF PITTSBURGH	Brinton, H. C.	HQ-EL	Zipf, E. C.	NGL 39-011-030	4371
31	UNIV OF SO FLORIDA	Hoell, J.	LARC	Braman, R. S.	NAS 1-16844	2327
31	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Kumar, S.	NAGW 57	2004
31	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Maxworthy, T.	NAGW 146	2007
31	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Judge, D. L.	NAGW 163	2010
31	UNIV OF SOUTHERN CAL	Murphy, R. E.	HQ-EL	Maxworthy, T.	NGR 05-018-178	2018
31	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Judge, D. L.	NGR 05-018-180	2019
31	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Shemansky, D. E.	NSG 7595	2024
31	UNIV TENNESSEE-KNOXV	Brinton, H. C.	HQ-EL	Broadfoot, A. L.	NSG 7644	2025
31	UNIV TENNESSEE-KNOXV	Camp, D. W.	MSFC	Frost, W.	NAS 8-32692	4446
31	UNIV TENNESSEE-KNOXV	Fowles, W. W.	MSFC	Antar, B. N.	NAS 8-33386	4447
31	UNIV TENNESSEE-KNOXV	Schafer, C. F.	MSFC	Antar, B. N.	NAS 8-34268	4448
31	UNIV TENNESSEE-KNOXV	Turner, R. E.	MSFC	Frost, W.	NAS 8-34627	4451
31	UNIV TENNESSEE-KNOXV	Campbell, W.	MSFC	Frost, W.	NAS 8-35347	4452
31	UNIV TENNESSEE-KNOXV	Brinton, H. C.	HQ-EL	Fox, K.	NAGW 125	4443
31	UNIV TEXAS-DALLAS	Spencer, N. W.	GSFC	Heikkila, W. J.	NAG 5-138	4689
31	UNIV TEXAS-DALLAS	Wales, R. O.	GSFC	Heikkila, W. J.	NAG 5-366	4694
31	UNIV TEXAS-DALLAS	Bullock, G. D.	GSFC	Hoffman, J. H.	NAS 5-11406	4697
31	UNIV TEXAS-DALLAS	Bullock, G. D.	GSFC	Hanson, W. B.	NAS 5-11407	4698
31	UNIV TEXAS-DALLAS	Brace, L. H.	GSFC	Heikkila, W. J.	NSG 5085	4713
31	UNIV TEXAS-DALLAS	Brace, L. H.	GSFC	Hoffman, J. H.	NSG 5087	4714
31	UNIV TEXAS-DALLAS	Spencer, N. W.	GSFC	Klumpar, D. M.	NSG 5280	4715
31	UNIV TEXAS-DALLAS	Jones, C. T.	MSFC	Tinsley, B. A.	NAS 8-33827	4707
31	UNIV TEXAS-DALLAS	Lynch, J. T.	HQ-EE	Hanson, W. B.	NGR 44-004-120	4712
31	UNIV TEXAS-DALLAS	Brinton, H. C.	HQ-EL	Hanson, W. B.	NGL 44-004-026	4710
31	UNIV TEXAS-DALLAS	Quaide, W. L.	HQ-EL	Hodges, R. R., Jr.	NSG 7034	4716
31	UNIV TEXAS-DALLAS	Murphy, R. E.	HQ-EL	Hanson, W. B.	NSG 7599	4717
31	UNIV OF UTAH	Kalnay, E.	GSFC	Paegle, J. N.	NAG 5-127	4746
31	UNIV OF UTAH	Brinton, H. C.	HQ-EL	Sassen, K.	NAGW 82	4749
31	UNIV OF VIRGINIA	Rodgers, E. B.	GSFC	Frank, W. M.	NAG 5-102	4906
31	UNIV OF VIRGINIA	Halem, M.	GSFC	Warner, C.	NAG 5-297	4909
31	UNIV OF VIRGINIA	Jones, J. L.	LARC	Singer, S. F.	NAS 1-16550	4915
31	UNIV OF VIRGINIA	Brinton, H. C.	HQ-EL	Johnson, R. E.	NAGW 461	4913
31	UNIV OF WASHINGTON	Summers, A. L.	ARC	Holton, J. R.	NAG 2-66	5030
31	UNIV OF WASHINGTON	Snetsinger, K. G.	ARC	Charlson, R. J.	NSG 2362	5075

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
31	UNIV OF WASHINGTON	Kalnay, E.	GSFC	Holton, J. R.	NAG 5-233	5039
31	UNIV OF WASHINGTON	Hwang, P.	GSFC	Katsaros, K. B.	NAG 5-354	5041
31	UNIV OF WASHINGTON	Wales, R. O.	GSFC	Potter, D. W.	NAG 5-363	5043
31	UNIV OF WASHINGTON	Wales, R. O.	GSFC	Parks, G. K.	NAG 5-373	5044
31	UNIV OF WASHINGTON	Nelson, D.	GSFC	Katsares, K. B.	NAS 5-26262	5067
31	UNIV OF WASHINGTON	Rouzer, L.	GSFC	Holton, J. R.	NAS 5-26301	5068
31	UNIV OF WASHINGTON	Dietrich, J. W.	JSC	Brownlee, D. E.	NSG 9052	5084
31	UNIV OF WASHINGTON	Russell, J. M., III	LARC	Leovy, C. B.	NAS 1-14341	5063
31	UNIV OF WASHINGTON	Hall, J. B.	LARC	Hartman, D. L.	NAS 1-16462	5064
31	UNIV OF WASHINGTON	Smith, R. E.	MSFC	Hobbs, P. V.	NAS 8-33148	5070
31	UNIV OF WASHINGTON	Smith, R. E.	MSFC	Ely, J. T.	NAS 8-33884	5071
31	UNIV OF WASHINGTON	Watson, R. T.	HQ-EE	Leovy, C. B.	NAGW 471	5062
31	UNIV OF WASHINGTON	Brinton, H. C.	HQ-EL	Tillman, J. E.	NAGW 36	5053
31	UNIV OF WASHINGTON	Murphy, R. E.	HQ-EL	Leovy, C. B.	NAGW 228	5056
31	UNIV OF WASHINGTON	Brinton, H. C.	HQ-EL	Leovy, C. B.	NSG 7085	5079
31	UNIV OF WASHINGTON	Brinton, H. C.	HQ-EL	Leovy, C.	NSG 7611	5082
31	UNIV OF WASHINGTON	Adler, R. F.	GSFC	Schlesinger, R. E.	NAG 5-23	5114
31	UNIV WISC-MADISON	Atlas, R. M.	GSFC	Johnson, D. R.	NAG 5-81	5115
31	UNIV WISC-MADISON	Kalnay, E.	GSFC	Wahba, G.	NAG 5-128	5116
31	UNIV WISC-MADISON	Susskind, J.	GSFC	Suomi, V. E.	NAG 5-274	5118
31	UNIV WISC-MADISON	Atlas, R. M.	GSFC	Suomi, V. E.	NAG 5-301	5119
31	UNIV WISC-MADISON	Kalnay, E.	GSFC	Wahba, G.	NAG 5-316	5120
31	UNIV WISC-MADISON	Greaves, J. R.	GSFC	Suomi, V. E.	NAS 5-21965	5134
31	UNIV WISC-MADISON	Gemmell, J.	GSFC	Kraushaar, W. L.	NAS 5-22410	5135
31	UNIV WISC-MADISON	Greaves, J. R.	GSFC	Suomi, V. E.	NAS 5-26540	5144
31	UNIV WISC-MADISON	Brakke, T.	GSFC	Eloranta, E. W.	NAS 5-27320	5146
31	UNIV WISC-MADISON	Hurley, E. J.	GSFC	Smith, W. L.	NAS 5-27608	5147
31	UNIV WISC-MADISON	Halem, M.	GSFC	Kutzbach, J. E.	NSG 5152	5162
31	UNIV WISC-MADISON	Halem, M.	GSFC	Herman, G. F.	NSG 5223	5163
31	UNIV WISC-MADISON	Halem, M.	GSFC	Horn, L. H.	NSG 5252	5164
31	UNIV WISC-MADISON	Browell, E. V.	LARC	Eloranta, E. W.	NAG 1-212	5104
31	UNIV WISC-MADISON	Hall, J. B., Jr.	LARC	Smith, W. L.	NAG 1-16507	5132
31	UNIV WISC-MADISON	Shook, D. F.	LERC	Scarpace, F. L.	NAG 3-174	5110
31	UNIV WISC-MADISON	Turner, R. E.	MSFC	Johnson, D. R.	NAS 8-33222	5148
31	UNIV WISC-MADISON	Wilson, G. S.	MSFC	Suchman, D.	NAS 8-33799	5149
31	UNIV WISC-MADISON	Wilson, G. S.	MSFC	Suomi, V. E.	NAS 8-34732	5150
31	UNIV WISC-MADISON	Dodge, J. C.	HQ-EB	Suomi, V. E.	NASW 3476	5152
31	UNIV WISC-MADISON	Chandra, S.	HQ-EE	Reinsel, G. C.	NAGW 401	5129
31	UNIV WISC-MADISON	Brinton, H. C.	HQ-EL	Suomi, V. E.	NAGW 314	5127
31	UNIV WISC-MADISON	Brinton, H. C.	HQ-EL	Suomi, V. E.	NGR 50-002-189	5159
31	UNIV WISC-MADISON	Toon, O. B.	ARC	Rosen, J. M.	NAG 2-65	5170
31	UNIV OF WYOMING	Simpson, J.	GSFC	Cooper, W. A.	NAS 5-27783	5180
31	UNIV OF WYOMING	McCormick, M. P.	LARC	Pepin, T. J.	NAS 1-14373	5174
31	UNIV OF WYOMING	McMaster, L. R.	LARC	Pepin, T. J.	NAS 1-14931	5175
31	UNIV OF WYOMING	McMaster, L. R.	LARC	Pepin, T. J.	NAS 1-16305	5176
31	UNIV OF WYOMING	McCormick, M. P.	LARC	Hofmann, D. J.	NAS 1-17289	5178
31	UNIV OF WYOMING	Smith, R. E.	MSFC	Vali, G.	NAS 8-33150	5181
31	UNIV OF WYOMING	Schiffer, R. A.	HQ-EE	Hofmann, D. J.	NAGW 430	5173
31	UTAH STATE UNIV	Browne, W. H., Jr.	GSFC	Torr, D. G.	NAS 5-26171	4770
31	UTAH STATE UNIV	Jones, C. T.	MSFC	Torr, M. R.	NAS 8-33992	4772
31	UTAH STATE UNIV	Esenwein, G. F.	HQ-EE	Torr, D. G.	NAGW 345	4766
31	UTAH STATE UNIV	Watson, R. T.	HQ-EE	Torr, M. R.	NAGW 354	4767
31	VIRGINIA POLY INST	Hinton, D. E.	LARC	Mahan, J. R.	NAS 1-16508	4994
31	WASHINGTON ST UNIV	Starr, W. L.	ARC	Campbell, W. J.	NAG 2-97	5085
31	WASHINGTON ST UNIV	Chandra, S.	HQ-EE	Cronn, D.	NSG 7214	5092
31	WASHINGTON UNIVERSTY	Dietrich, J.	JSC	Margolis, S. H.	NAG 9-7	3434
31	WAYNE STATE UNIV	Margozzi, A. P.	ARC	Wang, C. C.	NAG 2-39	3347
31	WESTRN KENTUCKY UNIV	Green, J. L.	MSFC	Six, N. F.	NAS 8-34424	2771
31	YALE UNIVERSITY	Toon, O. B.	ARC	Wegener, P. P.	NAG 2-15	2152
31	YALE UNIVERSITY	Fichel, B. G.	MSFC	Saltzman, B.	NAS 8-34903	2159



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32	ALASKA PACIFIC UNIV	Demel, K. J.	JSC	Ingram, J.	NAS 9-16719	1071
32	ARIZONA STATE UNIV	Pollack, J. B.	ARC	Unavailable	NAG 2-174	1083
32	ARIZONA STATE UNIV	Pollack, J.	ARC	Greeley, R.	NSG 2284	1113
32	ARIZONA STATE UNIV	Dietrich, J. W.	JSC	Buseck, P. R.	NAG 9-59	1093
32	ARIZONA STATE UNIV	Devincenzi, D. L.	HQ-EB	Cronin, J. R.	NSG 7255	1116
32	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Malin, M. C.	NAGW 1	1094
32	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Krinsley, D.	NAGW 24	1095
32	ARIZONA STATE UNIV	Quaide, W. L.	HQ-EL	Greeley, R.	NAGW 56	1096
32	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Greeley, R.	NAGW 132	1097
32	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Malin, M.	NAGW 139	1098
32	ARIZONA STATE UNIV	Taylor, L. A.	HQ-EL	Buseck, P. R.	NAGW 143	1099
32	ARIZONA STATE UNIV	Quaide, W. L.	HQ-EL	Holloway, J. R.	NAGW 182	1100
32	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Sheridan, M. F.	NAGW 245	1101
32	ARIZONA STATE UNIV	Quaide, W. L.	HQ-EL	Greeley, R.	NAGW 263	1102
32	ARIZONA STATE UNIV	Taylor, L. A.	HQ-EL	Moore, C. B.	NGL 03-001-001	1109
32	ARIZONA STATE UNIV	Taylor, L. A.	HQ-EL	Larimer, J. W.	NSG 7040	1115
32	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Greeley, R.	NSG 7415	1117
32	ARIZONA STATE UNIV	Holt, S. S.	HQ-MF	Greeley, R.	NASW 3741	1105
32	AUBURN UNIV-AUBURN	Slaby, J. A.	MSFC	Moore, R. K.	NAS 8-34130	1010
32	BOSTON UNIVERSITY	Devincenzi, D. L.	HQ-EB	Margulis, L.	NGR 22-004-025	2996
32	BROWN UNIVERSITY	Broderick, J. C.	GSFC	Head, J. W.	NAS 5-26729	4388
32	BROWN UNIVERSITY	Quaide, W. L.	HQ-EL	Pieters, C. M.	NAGW 28	4384
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Head, J. W.	NAGW 137	4385
32	BROWN UNIVERSITY	Quaide, W. L.	HQ-EL	Grieve, R. A.	NAGW 454	4386
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Head, J. W.	NASW 3508	4389
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Head, J. W.	NGR 40-002-088	4390
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Head, J. W.	NGR 40-002-116	4391
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Head, J. W.	NSG 7569	4394
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Head, J.	NSG 7570	4395
32	BROWN UNIVERSITY	Quaide, W. L.	HQ-EL	Rutherford, M. J.	NSG 7589	4396
32	BROWN UNIVERSITY	Quaide, W. L.	HQ-EL	Parmentier, E. M.	NSG 7605	4397
32	CALIF INST OF TECH	Welker, J. E.	GSFC	Hager, B. H.	NAG 5-315	1256
32	CALIF INST OF TECH	Mead, G. D.	GSFC	Hager, B. H.	NAS 5-27226	1284
32	CALIF INST OF TECH	Dietrich, J. W.	JSC	Wasserburg, G. J.	NAG 9-43	1261
32	CALIF INST OF TECH	Boyce, J. M.	HQ-EL	Shoemaker, E. M.	NAGW 138	1265
32	CALIF INST OF TECH	Quaide, W. L.	HQ-EL	Tombrello, T. A.	NAGW 148	1266
32	CALIF INST OF TECH	Quaide, W. L.	HQ-EL	Stevenson, D. J.	NAGW 185	1268
32	CALIF INST OF TECH	Quaide, W. L.	HQ-EL	Stone, E. C.	NAGW 200	1269
32	CALIF INST OF TECH	Quaide, W. L.	HQ-EL	Haff, P. K.	NAGW 202	1270
32	CALIF INST OF TECH	Quaide, W. L.	HQ-EL	Ahrens, T. J.	NAGW 205	1271
32	CALIF INST OF TECH	Quaide, W. L.	HQ-EL	Stolper, E.	NAGW 257	1275
32	CALIF INST OF TECH	Boyce, J. M.	HQ-EL	Stevenson, D. J.	NAGW 450	1278
32	CALIF INST OF TECH	Quaide, W. L.	HQ-EL	Mazur, V.	NGL 05-002-105	1296
32	CALIF INST OF TECH	Quaide, W. L.	HQ-EL	Ahrens, T. J.	NSG 7129	1311
32	CALIF INST OF TECH	Quaide, W. L.	HQ-EL	Burnett, D. S.	NSG 7202	1312
32	CAL STATE U-FULLERTN	Tuyahov, A. J.	HQ-EL	Anderson, D. L.	NSG 7610	1314
32	CAL STATE U-NRTHRDGE	Taylor, L. A.	HQ-EL	Woolum, D. S.	NSG 7314	1334
32	CARNEGIE-MELLON UNIV	Owens, F. C.	HQ-LB	Adams, H.	NGT 05-062-800	1345
32	CITY COLLEGE OF N Y	Hartung, J.	HQ-EL	Kohman, T. P.	NSG 7585	4245
32	COLUMBIA UNIVERSITY	Boyce, J. M.	HQ-EL	Weiss, D.	NAGW 22	3617
32	COLUMBIA UNIVERSITY	Welker, J.	GSFC	Watts, T. S.	NAG 5-98	3638
32	COLUMBIA UNIVERSITY	Mead, G. D.	GSFC	Johnson, T. L.	NAS 5-27237	3646
32	COLUMBIA UNIVERSITY	Mead, G. D.	GSFC	Scholz, C. H.	NAS 5-27239	3647
32	COLUMBIA UNIVERSITY	Ungar, S. G.	GSFC	Lewis, R. A.	NCC 5-20	3655
32	CORNELL UNIVERSITY	French, B. M.	HQ-EL	O'nions, R. K.	NSG 7200	3662
32	CORNELL UNIVERSITY	Welker, J. E.	GSFC	Turcott, D.	NAG 5-319	3678
32	CORNELL UNIVERSITY	Mead, G. D.	GSFC	Oliver, J.	NAS 5-27232	3690
32	CORNELL UNIVERSITY	Mead, G. D.	GSFC	Turcotte, D. L.	NAS 5-27340	3691
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Thomas, P. C.	NAGW 111	3682
32	CORNELL UNIVERSITY	Quaide, W. L.	HQ-EL	Veverka, J.	NAGW 193	3684

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32	CORNELL UNIVERSITY	Quaide, W. L.	HQ-EL	Burns, J. A.	NAGW 310	3685
32	CORNELL UNIVERSITY	Quaide, W. L.	HQ-EL	Dermott, S. F.	NAGW 392	3687
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Veverka, J.	NASW 3342	3692
32	CORNELL UNIVERSITY	Quaide, W. L.	HQ-EL	Turcotte, D. L.	NGR 33-010-108	3700
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Sagan, C. E.	NGR 33-010-220	3703
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Veverka, J.	NSG 7156	3712
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Veverka, J.	NSG 7546	3715
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Veverka, J.	NSG 7593	3716
32	CORNELL UNIVERSITY	Quaide, W. L.	HQ-EL	Burns, J. A.	NSG 7606	3717
32	CORNELL UNIVERSITY	Quaide, W. L.	HQ-EL	Veverka, J.	NAG 5-159	3483
32	DARTMOUTH COLLEGE	Kouns, C. W.	GSFC	Birnie, R. W.	NCC 5-22	3487
32	DARTMOUTH COLLEGE	Ungar, S. G.	GSFC	Birnie, R. W.	NSG 5348	3490
32	DARTMOUTH COLLEGE	Wales, R. O.	GSFC	Sonnerup, B. U.	NAG 5-314	3012
32	HARVARD UNIVERSITY	Welker, J. E.	GSFC	England, P. C.	NAS 5-27229	3024
32	HARVARD UNIVERSITY	Mead, G. D.	GSFC	O'connell, R. J.	NAS 5-27571	3025
32	HARVARD UNIVERSITY	Mead, G. D.	GSFC	Shapiro, I. I.	NGL 22-007-069	3032
32	HARVARD UNIVERSITY	Devincenzi, D. L.	HQ-EB	Barghoorn, E. S.	NAGW 484	3019
32	HARVARD UNIVERSITY	Williams, R. J.	HQ-EL	Dymek, R. F.	NGR 22-007-269	3034
32	HARVARD UNIVERSITY	Quaide, W. L.	HQ-EL	Cameron, A. G.	NCA 2-283304	1354
32	HARVEY MUDD COLLEGE	Anderson, K. F.	DFRF	Tanenbaum, B. S.	NCA 2-305201	3724
32	HUNTER COLLEGE	Peterson, D. L.	ARC	Strahler, A.	NSG 5325	3725
32	HUNTER COLLEGE	Ungar, S. G.	GSFC	Robinson, V. B.	NSG 9077	2565
32	INDIANA U-BLOOMINGTN	Dietrich, J. W.	JSC	Basu, A.	NAG 5-32	2810
32	JOHNS HOPKINS UNIV	Welker, J.	GSFC	Marsh, B. D.	NAG 5-35	2811
32	JOHNS HOPKINS UNIV	Kouns, C. W.	GSFC	Marsh, B. D.	NAGW 425	2822
32	JOHNS HOPKINS UNIV	Boyce, J. M.	HQ-EL	Garsh, B. D.	NSG 7613	2692
32	KANSAS STATE UNIV	Boyce, J. M.	HQ-EL	Underwood, J. R., Jr.	NAG 5-165	4052
32	KENT STATE UNIV-KENT	Labovitz, M. L.	GSFC	Craig, R. G.	NAS 5-26111	4053
32	KENT STATE UNIV-KENT	Toll, D. L.	GSFC	Craig, R.	NGR 39-007-043	4279
32	LEHIGH UNIVERSITY	Taylor, L. A.	HQ-EL	Goldstein, J. I.	NAS13-148	2781
32	LA ST U&A&M COL-BRGE	Brannon, D. P.	NSTL	Whitehurst, C. A.	NAGW 473	2778
32	LA ST U&A&M COL-BRGE	Boyce, J. M.	HQ-EL	Nummedal, D.	NSG 7542	2785
32	LA STATE U-SHREVEPT	Boyce, J. M.	HQ-EL	Nummedal, D.	NAG 5-19	3096
32	MASS INST OF TECH	Kouns, C. W.	GSFC	Molnar, P.	NAG 5-41	3097
32	MASS INST OF TECH	Kouns, C. W.	GSFC	Toksoz, M. N.	NAG 5-44	3099
32	MASS INST OF TECH	Welker, J.	GSFC	Solomon, S. C.	NAG 5-147	3103
32	MASS INST OF TECH	Kouns, C. W.	GSFC	Spear, F. S.	NAG 5-149	3104
32	MASS INST OF TECH	Kouns, C. W.	GSFC	Molnar, P.	NAG 5-300	3109
32	MASS INST OF TECH	Kouns, C. W.	GSFC	Molnar, P.	NAS 5-26861	3141
32	MASS INST OF TECH	Shiue, J. C.	GSFC	Kong, J. A.	NAS 5-27230	3142
32	MASS INST OF TECH	Mead, G. D.	GSFC	Shapiro, I. I.	NAS 5-27339	3144
32	MASS INST OF TECH	Mead, G. D.	GSFC	Solomon, S. C.	NAGW 191	3119
32	MASS INST OF TECH	Quaide, W. L.	HQ-EL	Solomon, S.	NAGW 215	3121
32	MASS INST OF TECH	Quaide, W. L.	HQ-EL	Shapiro, I. I.	NAGW 332	3123
32	MASS INST OF TECH	Quaide, W. L.	HQ-EL	Reasenberg, R. D.	NAGW 433	3127
32	MASS INST OF TECH	Quaide, W. L.	HQ-EL	Pattengill, G. H.	NGL 22-009-521	3171
32	MASS INST OF TECH	Brinton, H. C.	HQ-EL	Lewis, J. S.	NSG 7081	3201
32	MASS INST OF TECH	Quaide, W. L.	HQ-EL	Solomon, S. C.	NSG 7297	3203
32	MASS INST OF TECH	Boyce, J. M.	HQ-EL	Solomon, S. C.	NSG 7604	3208
32	MASS INST OF TECH	Quaide, W. L.	HQ-EL	Burns, R. G.	NAS13-171	4424
32	MIDDLE TENN ST UNIV	Conner, P. K.	NSTL	Fullerton, R. O.	NAS13-200	2754
32	MURRAY STATE U-KY	Severs, T. L.	NSTL	Weber, N. V.	NAGW 447	2753
32	MURRAY STATE U-KY	Boyce, J. M.	HQ-EL	Clark, P. E.	NAS 5-26157	3904
32	NO CAROLINA STATE U	Oseroff, H.	GSFC	Won, I. J.	NSG 7534	2787
32	NE LOUISIANA UNIV	Boyce, J. M.	HQ-EL	Dehon, R.	NAGW 355	1119
32	NORTHERN ARIZONA U	Boyce, J. M.	HQ-EL	Barnes, C. W.	NAS 5-27238	2458
32	NORTHWESTERN UNIV	Mead, G. D.	GSFC	Stein, S.	NAS 5-25888	4085
32	OHIO STATE UNIV	Stephanides, C. C.	GSFC	Mueller, I. I.	NGR 36-008-161	4092
32	OHIO STATE UNIV	Welker, J.	GSFC	Rapp, R. H.	NSG 5265	4104
32	OHIO STATE UNIV	Welker, J.	GSFC	Mueller, I. I.	NAS13-184	4191
32	OKLAHOMA STATE UNIV	Barlow, R. M.	NSTL	Walsh, S. J.		

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32	OREGON STATE UNIV	Mouat, D. A.	ARC	Frenkel, R. E.	NCA 2-586201	4220
32	OREGON STATE UNIV	Mead, G.	GSFC	Couch, R. W.	NAS 5-27369	4219
32	OREGON STATE UNIV	Phinney, W. C.	JSC	Lawrence, R. D.	NAG 9-2	4216
32	OREGON STATE UNIV	Dietrich, J. W.	JSC	Schmitt, R. A.	NAG 9-63	4217
32	OREGON STATE UNIV	Boyce, J. M.	HQ-EL	Komar, P. D.	NSG 7178	4225
32	PENN STATE U-UNIV PK	Toon, O. B.	ARC	Carlson, T. N.	NCA 2-589001	4325
32	PENN STATE U-UNIV PK	Kouns, C. W.	GSFC	Alexander, S. S.	NAG 5-49	4295
32	PENN STATE U-UNIV PK	Kouns, C. W.	GSFC	Alexander, S. S.	NAG 5-77	4296
32	PENN STATE U-UNIV PK	Labovitz, M. L.	GSFC	Smith, C. B.	NAS 5-26215	4312
32	PENN STATE U-UNIV PK	Oseroff, H.	GSFC	Petersen, G. W.	NAS 5-26612	4316
32	PENN STATE U-UNIV PK	Owens, F. C.	HQ-LB	Alexander, S. S.	NGT 39-009-803	4334
32	PENN STATE U-UNIV PK	Owens, F. C.	HQ-LB	Alexander, S. S.	NGT 39-009-805	4336
32	PENN STATE U-UNIV PK	Owens, F. C.	HQ-LB	Peterson, G. W.	NGT 39-009-806	4337
32	PRINCETON UNIVERSITY	Stephanides, C. C.	GSFC	Morgan, W. J.	NAS 5-25896	3546
32	PRINCETON UNIVERSITY	Mead, G. D.	GSFC	Morgan, W. J.	NAS 5-27341	3548
32	PRINCETON UNIVERSITY	Quaide, W. L.	HQ-EL	Hargraves, R. B.	NAGW 372	3536
32	PRINCETON UNIVERSITY	Boyce, J. M.	HQ-EL	Judson, S.	NSG 7568	3564
32	PRINCETON UNIVERSITY	Owens, F. C.	HQ-LB	Fels, S. B.	NGT 31-001-801	3556
32	PURDUE UNIVERSITY	Kouns, C. W.	GSFC	Crough, S. T.	NAG 5-231	2595
32	PURDUE UNIVERSITY	Kouns, C. W.	GSFC	Hinze, W. J.	NAG 5-304	2597
32	PURDUE UNIVERSITY	Oseroff, H.	GSFC	Hinze, W. J.	NAS 5-26287	2601
32	PURDUE UNIVERSITY	Calabrese, M. A.	HQ-EL	Baumgerder, M. F.	NAGW 393	2599
32	PURDUE UNIVERSITY	Taylor, L. A.	HQ-EL	Lipschutz, M. E.	NGL 15-005-140	2614
32	RICE UNIVERSITY	Dietrich, J. W.	JSC	Heymann, D.	NGL 44-006-127	4516
32	RICE UNIVERSITY	Quaide, W. L.	HQ-EL	Clayton, D. D.	NSG 7361	4525
32	RICE UNIVERSITY	Owens, F. C.	HQ-LB	Leeman, W. R.	NGT 44-006-802	4519
32	RUTGERS U-N BRUNSWK	Dietrich, J. W.	JSC	Hewins, R. H.	NAG 9-35	3569
32	RUTGERS U-N BRUNSWK	Warner, J. L.	JSC	Klein, L. C.	NSG 9065	3574
32	RUTGERS U-N BRUNSWK	Taylor, L. A.	HQ-EL	Herzog, G. F.	NAGW 142	3570
32	RUTGERS U-N BRUNSWK	Quaide, W. L.	HQ-EL	Herzberg, C. T.	NAGW 177	3571
32	RUTGERS U-N BRUNSWK	Taylor, L. A.	HQ-EL	Hewins, R. H.	NSG 7327	3572
32	RUTGERS U-N BRUNSWK	Boyce, J. M.	HQ-EL	Zebib, A.	NSG 7601	3573
32	SO DAKOTA SCHL MINES	Dietrich, J. W.	JSC	Papike, J. J.	NAG 9-22	4418
32	SOUTHERN METHODIST U	Kouns, C. W.	GSFC	Phillips, R. J.	NAG 5-298	4528
32	SOUTHERN METHODIST U	Quaide, W. L.	HQ-EL	Phillips, R. J.	NAGW 459	4529
32	SOUTHERN METHODIST U	Carter, C. H.	HQ-LB	Dungan, M. A.	NGT 44-007-800	4532
32	STANFORD UNIVERSITY	Welker, J.	GSFC	Nur, A. M.	NAG 5-178	1478
32	STANFORD UNIVERSITY	Quaide, W. L.	HQ-EL	Tyler, G. L.	NAGW 341	1493
32	STANFORD UNIVERSITY	Boyce, J. M.	HQ-EL	Howard, H. T.	NGR 05-020-649	1589
32	STATE UNIV NY-ALBANY	Kouns, C. W.	GSFC	Dewey, J. F.	NAG 5-24	3784
32	STATE UNIV NY-ALBANY	Kouns, C. W.	GSFC	Burke, K.	NAG 5-155	3785
32	STATE UNIV NY-ALBANY	Welker, J. E.	GSFC	Burke, K.	NAG 5-333	3786
32	STATE UNIV NY-ALBANY	Mead, G. D.	GSFC	Dewey, J. F.	NAS 5-27227	3789
32	STATE UNIV NY-ALBANY	Williams, R. J.	HQ-EL	Kidd, W. S.	NAGW 487	3787
32	STATE UNIV NY-ALBANY	Williams, R. J.	HQ-EL	Burke, K.	NAGW 489	3788
32	STATE UNIV NY-ALBANY	Holt, H. E.	HQ-EL	Anderson, D. M.	NASW 3333	3797
32	STATE U NY-BINGHAMTN	Welker, J. E.	GSFC	Dickman, S. R.	NAG 5-145	3803
32	STATE U NY-BINGHAMTN	Welker, J. E.	GSFC	Wu, F. T.	NAG 5-240	3804
32	STATE UNIV NY-BUFFAL	Boyce, J. M.	HQ-EL	Anderson, D.	NAGW 330	3813
32	STATE UNIV NY-BUFFAL	Boyce, J. M.	HQ-EL	Shapiro, I. I.	NGR 33-015-108	3815
32	STATE U NY-STONY BRK	Welker, J.	GSFC	Melosh, H. J.	NAG 5-151	3821
32	STATE U NY-STONY BRK	Williams, R. J.	HQ-EL	Hanson, G. N.	NAGW 486	3830
32	STATE U NY-STONY BRK	Quaide, W. L.	HQ-EL	Schaeffer, O. A.	NAGW 25	3825
32	STATE U NY-STONY BRK	Williams, R. J.	HQ-EL	Melosh, H. J.	NAGW 50	3826
32	STATE U NY-STONY BRK	Boyce, J. M.	HQ-EL	Owens, T.	NSG 7553	3851
32	SUL ROSS STATE UNIV	Boyce, J. M.	HQ-EL	Whitford-stark H. J.	NAGW 382	4534
32	SUL ROSS STATE UNIV	Boyce, J. M.	HQ-EL	Whitford-stark H. J.	NAGW 394	4535
32	TEXAS A&I UNIVERSITY	Demel, K. J.	JSC	Greegor, D.	NAS 9-16718	4536
32	TEXAS A&M UNIVERSITY	Schmugge, T. J.	GSFC	Newton, R. W.	NAG 5-31	4554
32	TEXAS A&M UNIVERSITY	Welker, J. E.	GSFC	Caputo, M.	NAG 5-94	4555

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
32	TEXAS A&M UNIVERSITY	Owens, F. C.	HQ-LB	McGrail, D. W.	NGT 44-001-801	4595
32	UNIV ALA-HUNTSVILLE	West, G. W.	MSFC	Hung, R. J.	NAS 8-33726	1036
32	UNIV ALASKA-FAIRBNKS	Wilson, D. E.	ARC	George, T. H.	NCA 2-20201	1077
32	UNIV OF ARIZONA	Welker, J. E.	GSFC	Richardson, R.	NAG 5-326	1139
32	UNIV OF ARIZONA	Musick, H. B.	NSTL	Hutchinson, C. F.	NAS13-198	1200
32	UNIV OF ARIZONA	Devincenzi, D. L.	HQ-EB	Nagy, B.	NGR 03-002-171	1208
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Woronow, A.	NAGW 134	1155
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Strom, R. G.	NAGW 135	1156
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Hubbard, W. B.	NAGW 192	1159
32	UNIV OF ARIZONA	French, B. M.	HQ-EL	Drake, M. J.	NAGW 220	1160
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Baker, V. R.	NAGW 285	1166
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Herbert, F.	NAGW 424	1172
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Melosh, H. J.	NAGW 428	1173
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Sonett, C. P.	NGR 03-002-370	1212
32	UNIV OF ARIZONA	Taylor, L. A.	HQ-EL	Wilkening, L. L.	NSG 7011	1218
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Hood, L. L.	NSG 7020	1219
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Strom, R. G.	NSG 7146	1225
32	UNIV OF ARIZONA	Taylor, L. A.	HQ-EL	Zellner, B. H.	NSG 7249	1226
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Levy, E. H.	NSG 7419	1229
32	UNIV OF ARIZONA	Taylor, L. A.	HQ-EL	Boynton, W. V.	NSG 7436	1230
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Woronow, A.	NSG 7544	1233
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Drake, M. J.	NSG 7576	1236
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Drake, M. J.	NSG 7577	1237
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Lebofsky, L.	NSG 7607	1238
32	UNIV ARKANSAS-FAYETV	Duke, M. B.	JSC	MacDonald, H. C.	NAG 9-3	1241
32	UNIV ARKANSAS-FAYETV	Taylor, L. A.	HQ-EL	Sears, D. W.	NAGW 296	1242
32	UNIV CALIF-BERKELEY	Wales, R. O.	GSFC	Anderson, K. A.	NAS 5-22307	1642
32	UNIV CALIF-BERKELEY	Quaide, W. L.	HQ-EL	Jeanloz, R.	NAGW 434	1636
32	UNIV CALIF-DAVIS	Pollack, J. B.	ARC	White, B. R.	NCA 2-180101	1707
32	UNIV CALIF-DAVIS	Summers, A. L.	ARC	White, B. R.	NCC 2-252	1715
32	UNIV CALIF-L ANGELES	Welker, J.	GSFC	Schubert, G.	NAG 5-152	1751
32	UNIV CALIF-L ANGELES	Welker, J. E.	GSFC	Kaula, W.	NAG 5-317	1753
32	UNIV CALIF-L ANGELES	Mead, G. D.	GSFC	Jackson, D. D.	NAS 5-26895	1775
32	UNIV CALIF-L ANGELES	Mead, G. D.	GSFC	Bird, G. P.	NAS 5-26957	1776
32	UNIV CALIF-L ANGELES	Welker, J.	GSFC	Kaula, W. M.	NSG 5263	1801
32	UNIV CALIF-L ANGELES	Wales, R. O.	GSFC	Crooker, N.	NSG 5351	1803
32	UNIV CALIF-L ANGELES	Dietrich, J. W.	JSC	Wasson, J. T.	NAG 9-40	1756
32	UNIV CALIF-L ANGELES	Devincenzi, D. L.	HQ-EB	Kaplan, I. R.	NGR 05-007-221	1788
32	UNIV CALIF-L ANGELES	Devincenzi, D. L.	HQ-EB	Schopf, J. W.	NGR 05-007-407	1793
32	UNIV CALIF-L ANGELES	Quaide, W. L.	HQ-EL	Russell, C. T.	NAGW 311	1763
32	UNIV CALIF-L ANGELES	Quaide, W. L.	HQ-EL	Kaula, W. M.	NGL 05-007-002	1784
32	UNIV CALIF-L ANGELES	Boyce, J. M.	HQ-EL	Schubert, G.	NGR 05-007-317	1790
32	UNIV CALIF-L ANGELES	French, B. M.	HQ-EL	Wasson, J. T.	NGR 05-007-329	1792
32	UNIV CALIF-L ANGELES	Quaide, W. L.	HQ-EL	Schubert, G.	NSG 7315	1807
32	UNIV CALIF-L ANGELES	Quaide, W. L.	HQ-EL	Busse, F. W.	NSG 7484	1809
32	UNIV CALIF-L ANGELES	Schmerling, E. R.	HQ-EZ	Schopf, J. W.	NSG 7489	1810
32	UNIV CALIF-SAN DIEGO	Welker, J.	GSFC	Berger, J.	NAG 5-11	1819
32	UNIV CALIF-SAN DIEGO	Welker, J. E.	GSFC	Spiess, F. N.	NAG 5-320	1826
32	UNIV CALIF-SAN DIEGO	Mead, G. D.	GSFC	Agnew, D. C.	NAS 5-27228	1853
32	UNIV CALIF-SAN DIEGO	Mead, G. D.	GSFC	Jordan, T. H.	NAS 5-27234	1854
32	UNIV CALIF-SAN DIEGO	Dietrich, J. W.	JSC	Lugmair, G. W.	NAG 9-49	1833
32	UNIV CALIF-SAN DIEGO	Devincenzi, D. L.	HQ-EB	Miller, S. L.	NAGW 20	1835
32	UNIV CALIF-SAN DIEGO	Quaide, W. L.	HQ-EL	Suess, H.	NAGW 103	1838
32	UNIV CALIF-SAN DIEGO	Williams, R. J.	HQ-EL	Arnold, J. R.	NAGW 210	1840
32	UNIV CALIF-SAN DIEGO	Quaide, W. L.	HQ-EL	Arrhenius, G.	NGL 05-009-002	1872
32	UNIV CALIF-SAN DIEGO	Quaide, W. L.	HQ-EL	Arnold, J. R.	NGR 05-005-005	1875
32	UNIV CALIF-SAN DIEGO	Quaide, W. L.	HQ-EL	Arnold, J. R.	NSG 7027	1880
32	UNIV CALIF-SAN DIEGO	Quaide, W. L.	HQ-EL	Alfven, H.	NSG 7102	1881
32	UNIV CALIF-SAN DIEGO	Taylor, L. A.	HQ-EL	MacDougall, J. D.	NSG 7121	1882
32	UNIV CALIF-SAN FRAN	Geib, D. S.	HQ-EB	Calvin, M.	NAGW 307	1890

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32	UNIV CALIF-S BARBARA	Lowman, P. D., Jr.	GSFC	Estes, J. E.	NAG 5-177	1920
32	UNIV CALIF-S BARBARA	Chang, A. T.	GSFC	Dozier, J.	NAG 5-328	1921
32	UNIV CALIF-S BARBARA	Chang, A.	GSFC	Estes, J. E.	NCC 5-5	1937
32	UNIV CALIF-S BARBARA	Amsbury, D. L.	JSC	Strahler, A. H.	NAS 9-15509	1932
32	UNIV CALIF-S BARBARA	Quaide, W. L.	HQ-EL	Peale, S. J.	NGR 05-010-062	1938
32	UNIV CALIF-S BARBARA	Quaide, W. L.	HQ-EL	Fuller, M. D.	NSG 7586	1943
32	UNIV OF CHICAGO	Dietrich, J. W.	JSC	Anders, E.	NAG 9-52	2479
32	UNIV OF CHICAGO	Dietrich, J. W.	JSC	Grossman, L.	NAG 9-54	2480
32	UNIV OF CHICAGO	Quaide, W. L.	HQ-EL	Ferrkevich, A. L.	NAGW 423	2484
32	UNIV OF CHICAGO	Taylor, L. A.	HQ-EL	Anders, E.	NGL 14-001-010	2499
32	UNIV OF CHICAGO	Taylor, L.	HQ-EL	Turkevich, A. L.	NGR 14-001-135	2504
32	UNIV OF CHICAGO	French, B. M.	HQ-EL	Grossman, L.	NGR 14-001-249	2507
32	UNIV OF CHICAGO	Quaide, W. L.	HQ-EL	Schramm, D. N.	NSG 7212	2509
32	UNIV COLORADO-BOLDR	Gaydos, L.	ARC	Walker, D. A.	NCA 2-170303	2103
32	UNIV COLORADO-BOLDR	Oseroff, H.	GSFC	Benton, E. R.	NAS 5-25957	2083
32	UNIV COLORADO-BOLDR	Mead, G. D.	GSFC	Wyss, M.	NAS 5-27236	2088
32	UNIV COLORADO-BOLDR	Mead, G. D.	GSFC	Whitcomb, J. H.	NAS 5-27370	2091
32	UNIV COLORADO-BOLDR	Mead, G. D.	GSFC	Morgan, W. J.	NAS 5-27644	2092
32	UNIV COLORADO-BOLDR	Kouns, C. W.	GSFC	Unavailable	NAS 5-27671	2093
32	UNIV COLORADO-BOLDR	Quaide, W. L.	HQ-EL	Spetzler, H. A.	NSG 7584	2119
32	UNIV OF GEORGIA	Conner, P. K.	NSTL	Welch, R.	NAS13-190	2398
32	UNIV OF GEORGIA	Boyce, J. M.	HQ-EL	Brook, G.	NSG 7539	2399
32	UNIV OF HAWAII-MANOA	Quaide, W. L.	HQ-EL	McCord, T. B.	NAGW 37	2404
32	UNIV OF HAWAII-MANOA	Quaide, W. L.	HQ-EL	Hawke, R. B.	NAGW 42	2405
32	UNIV OF HAWAII-MANOA	Quaide, W. L.	HQ-EL	Clark, R. N.	NAGW 115	2407
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Fanele, F.	NAGW 133	2408
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Morrison, D.	NAGW 136	2409
32	UNIV OF HAWAII-MANOA	Quaide, W. L.	HQ-EL	Fanale, F. P.	NAGW 171	2411
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Hawke, B. R.	NAGW 237	2412
32	UNIV OF HAWAII-MANOA	Williams, R. J.	HQ-EL	Fanale, F. P.	NAGW 348	2414
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Mark, P. M.	NAGW 437	2415
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Hawke, B. R.	NASW 3566	2421
32	UNIV OF HAWAII-MANOA	Quaide, W. L.	HQ-EL	McCord, T. B.	NSG 7312	2426
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Pilcher, C. B.	NSG 7403	2428
32	UNIV OF HAWAII-MANOA	Quaide, W. L.	HQ-EL	Gaffey, M. J.	NSG 7462	2429
32	UNIV OF HAWAII-MANOA	Quaide, W. L.	HQ-EL	Gaffey, M. J.	NSG 7597	2432
32	UNIV HOUSTON-HOUSTON	Geib, D. S.	HQ-EB	Oro, J.	NGR 44-005-002	4619
32	UNIV HOUSTON-HOUSTON	Boyce, J. M.	HQ-EL	King, E. A.	NAGW 169	4608
32	UNIV HOUSTON-HOUSTON	Quaide, W. L.	HQ-EL	King, E. A.	NAGW 178	4609
32	UNIV HOUSTON-HOUSTON	Boyce, J. M.	HQ-EL	Woronow, A.	NAGW 439	4610
32	UNIV HOUSTON-HOUSTON	Boyce, J. M.	HQ-EL	Smith, R.	NSG 7551	4628
32	UNIV OF IDAHO	Peterson, D. L.	ARC	Ulliman, J. J.	NCA 2-310201	2435
32	UNIV OF IOWA	Oseroff, H.	GSFC	Carmichael, R. S.	NAS 5-26425	2679
32	UNIV OF KANSAS	Paris, J. F.	JSC	Ulaby, F. T.	NAS 9-16419	2720
32	UNIV MARYLAND-COL PK	Frey, H. V.	GSFC	Trasco, J. D.	NAG 5-245	2880
32	UNIV MARYLAND-COL PK	Ungar, S. G.	GSFC	Goward, S. N.	NCC 5-26	2934
32	UNIV MARYLAND-COL PK	Masuoka, E.	GSFC	Chang, C. C.	NSG 5423	2974
32	UNIV MARYLAND-COL PK	Quaide, W. L.	HQ-EL	Roosen, J. G.	NSG 7046	2975
32	UNIV OF MASS-AMHERST	Oseroff, H.	GSFC	Haggerty, S. E.	NAS 5-26414	3227
32	UNIV OF MASS-AMHERST	Dietrich, J. W.	JSC	Rhodes, J. M.	NSG 9069	3235
32	UNIV OF MASS-AMHERST	Quaide, W. L.	HQ-EL	Huguenin, R. L.	NAGW 40	3222
32	UNIV OF MASS-AMHERST	Quaide, W. L.	HQ-EL	Pattengill, G. H.	NAGW 436	3225
32	UNIV OF MASS-AMHERST	Quaide, W. L.	HQ-EL	Huguenin, R. L.	NAGW 440	3226
32	UNIV OF MASS-AMHERST	Boyce, J. M.	HQ-EL	McGill, G. E.	NGR 22-010-076	3230
32	UNIV OF MASS-AMHERST	Boyce, J. M.	HQ-EL	Huguenin, R. L.	NSG 7405	3233
32	UNIV OF MASS-AMHERST	French, B. M.	HQ-EL	Haggerty, S. E.	NSG 7549	3234
32	UNIV OF MIAMI	Oseroff, H.	GSFC	Harrison, C. G.	NAS 5-26201	2314
32	UNIV OF MIAMI	Quaide, W. L.	HQ-EL	Brass, G. B.	NSG 7510	2324
32	UNIV MICH-ANN ARBOR	Devincenzi, D. L.	HQ-EB	Hayes, J. M.	NAGW 252	3297
32	UNIV MICH-ANN ARBOR	Carter, C. H.	HQ-LB	Olson, C. E.	NGT 23-005-800	3338

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32	U MINN-MNPLS-ST PAUL	Welker, J. E.	GSFC	Chase, C. G.	NAG 5-313	3363
32	U MINN-MNPLS-ST PAUL	Dietrich, J. W.	JSC	Pepin, R. O.	NAG 9-60	3365
32	U MINN-MNPLS-ST PAUL	Dietrich, J. W.	JSC	Weiblen, P. W.	NSG 9050	3383
32	U MINN-MNPLS-ST PAUL	Williams, R. J.	HQ-EL	Alexander, E. C.	NAGW 485	3366
32	UNIV MO-COLUMBIA	Joyce, A. T.	NSTL	Pirog, R.	NAS13-174	3413
32	UNIV MO-COLUMBIA	Boyce, J. M.	HQ-EL	Whitford-stark H. J. L.	NAGW 170	3410
32	UNIV MO-ROLLA	Atwell, B. H.	NSTL	Elifrits, C. D.	NAS13-150	3425
32	UNIV MO-ST LOUIS	Quaide, W. L.	HQ-EL	James, P. B.	NSG 7563	3430
32	UNIV NEW HAMP-DURHAM	Lynch, J. T.	HQ-EE	Moore, J. T.	NAGW 52	3495
32	UNIV OF NEW MEXICO	Dietrich, J. W.	JSC	Keil, K.	NAG 9-30	3600
32	UNIV OF NEW MEXICO	French, B. M.	HQ-EL	Keil, K.	NGL 32-004-064	3603
32	UNIV OF NEW MEXICO	Boyce, J. M.	HQ-EL	Elston, W. E.	NGR 32-004-062	3604
32	UNIV OF NORTH DAKOTA	Boyce, J. M.	HQ-EL	Karner, F. R.	NAGW 151	3925
32	UNIV OF PITTSBURGH	Kouns, C. W.	GSFC	Lidiak, E. G.	NSG 5270	4374
32	UNIV OF PITTSBURGH	Quaide, W. L.	HQ-EL	Hapke, B.	NSG 7631	4376
32	UNIV OF RHODE ISLAND	Devincenzi, D. L.	HQ-EB	Abell, P. I.	NAGW 206	4399
32	UNIV OF RHODE ISLAND	Boyce, J. M.	HQ-EL	Boothroyd, J. C.	NSG 7414	4401
32	UNIV OF SOUTHERN CAL	Quaide, W. L.	HQ-EL	Sammis, C. G.	NAGW 43	2003
32	UNIV OF SOUTHERN CAL	Quaide, W. L.	HQ-EL	Dabrowski, A. J.	NSG 7535	2023
32	UNIV TENNESSEE-KNOXV	Dietrich, J. W.	JSC	McSween, H. Y.	NAG 9-58	4441
32	UNIV TENNESSEE-KNOXV	Dietrich, J. W.	JSC	Taylor, L. A.	NAG 9-62	4442
32	UNIV TENNESSEE-KNOXV	Quaide, W. L.	HQ-EL	McSween, H. Y.	NSG 7413	4462
32	UNIV TENNESSEE-KNOXV	Carter, C. H.	HQ-LB	Taylor, L. A.	NGT 43-001-803	4457
32	UNIV TENNESSEE-KNOXV	Owens, F. C.	HQ-LB	Taylor, L. A.	NGT 43-001-805	4459
32	UNIV TEXAS-AUSTIN	Welker, J. E.	GSFC	Schutz, R. E.	NAG 5-346	4648
32	UNIV TEXAS-AUSTIN	Mead, G. D.	GSFC	Tapley, B. D.	NAS 5-26955	4657
32	UNIV TEXAS-AUSTIN	Mead, G.	GSFC	Shelus, P. J.	NAS 5-27235	4658
32	UNIV TEXAS-AUSTIN	Kolenkiewicz, R.	GSFC	Tapley, B. D.	NAS 5-27344	4659
32	UNIV TEXAS-AUSTIN	Blanchard, D. P.	JSC	Muehlberger, W. R.	NAG 9-11	4649
32	UNIV TEXAS-AUSTIN	Crews, J. L.	JSC	Kyriakides, S.	NAS 9-16875	4668
32	UNIV TEXAS-AUSTIN	Boyce, J. M.	HQ-EL	Smith, R. S.	NAGW 286	4651
32	UNIV TEXAS-AUSTIN	Quaide, W. L.	HQ-EL	Smoluchowski, R.	NSG 7505	4683
32	UNIV TEXAS-AUSTIN	Boyce, J. M.	HQ-EL	Baker, V.	NSG 7557	4684
32	UNIV TEXAS-AUSTIN	Carter, C. H.	HQ-LB	Smith, D.	NGT 44-012-800	4675
32	UNIV TEXAS-DALLAS	Oseroff, H.	GSFC	Klumpar, D. M.	NAS 5-26309	4705
32	UNIV TEXAS-EL PASO	Oseroff, H.	GSFC	Keller, E. R.	NAS 5-26326	4719
32	U TEX MED BRANCH-GAL	Stephanides, C. C.	GSFC	Nakamura, Y.	NAS 5-25897	4724
32	UNIV OF TOLEDO	Brinton, H. C.	HQ-EL	Delsemme, A. H.	NSG 7301	4179
32	UNIV OF UTAH	Lowman, P. D.	GSFC	Smith, R. B.	NAG 5-164	4747
32	UNIV OF UTAH	Williams, R. J.	HQ-EL	Shorthill, R. W.	NAGW 491	4753
32	UNIV OF UTAH	Owens, F. C.	HQ-LB	McCoy, R. M.	NGT 45-003-802	4757
32	UNIV OF VIRGINIA	Quaide, W. L.	HQ-EL	Johnson, R. E.	NAGW 186	4911
32	UNIV OF VIRGINIA	Boyce, J. M.	HQ-EL	Howard, A. D.	NSG 7572	4925
32	UNIV OF WASHINGTON	Dietrich, J. W.	JSC	Adams, J. D.	NSG 9032	5083
32	UNIV OF WASHINGTON	Quaide, W. L.	HQ-EL	Holsapple, K. A.	NAGW 328	5059
32	UNIV OF WASHINGTON	Williams, R. J.	HQ-EL	Adams, J. B.	NSG 7173	5080
32	UNIV OF WASHINGTON	Quaide, W. L.	HQ-EL	McCallum, I. S.	NSG 7313	5081
32	UNIV OF WASHINGTON	Vitale, J. A.	HQ-ET	Adams, J. B.	NAGW 85	5054
32	UNIV WISC-MADISON	Oseroff, H.	GSFC	Bentley, C. R.	NAS 5-25977	5139
32	VA MILITARY INST	Quaide, W. L.	HQ-EL	Schreiber, H. D.	NAGW 213	4929
32	VA MILITARY INST	Quaide, W. L.	HQ-EL	Schreiber, H. D.	NSG 7355	4930
32	VIRGINIA POLY INST	Williams, R. J.	HQ-EL	Eriksson, K. A.	NAGW 488	4992
32	WASHINGTON ST UNIV	Taylor, L. A.	HQ-EL	Srinivasan, B.	NAGW 234	5086
32	WASHINGTON UNIVERSTY	Stuart, L.	GSFC	Arvidson, R. E.	NAS 5-26533	3445
32	WASHINGTON UNIVERSTY	Duke, M. B.	JSC	Arvidson, R. E.	NAG 9-24	3435
32	WASHINGTON UNIVERSTY	Dietrich, J. W.	JSC	Walker, R. M.	NAG 9-55	3436
32	WASHINGTON UNIVERSTY	Dietrich, J. W.	JSC	Haskin, L. A.	NAG 9-56	3437
32	WASHINGTON UNIVERSTY	Dietrich, J. W.	JSC	Haskin, L. A.	NSG 9055	3457
32	WASHINGTON UNIVERSTY	Rosendhal, J. D.	HQ-E	Smith, W. H.	NAGW 418	3441
32	WASHINGTON UNIVERSTY	Williams, R. J.	HQ-EL	Haskin, L. A.	NAGW 179	3439

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## APPENDIX - CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
32	WASHINGTON UNIVERSITY	Quaide, W. L.	HQ-EL	McKinnon, W. B.	NAGW 432	3443
32	WASHINGTON UNIVERSITY	Boyce, J. M.	HQ-EL	Arvidson, R. E.	NSG 7087	3452
32	WASHINGTON UNIVERSITY	Boyce, J. M.	HQ-EL	Arvidson, R. E.	NSG 7545	3455
32	WASHINGTON UNIVERSITY	Quaide, W. L.	HQ-EL	Goettal, K. A.	NSG 7578	3456
32	WESLEYAN UNIVERSITY	Boyce, J. M.	HQ-EL	Patton, P. C.	NAGW 244	2149
32	WOODSHOLE OCEAN INST	Fimmel, R. O.	ARC	Bowin, C. O.	NAG 2-91	3238
32	WOODSHOLE OCEAN INST	Rao, D. B.	GSFC	Gaddy, G. T.	NAG 5-185	3239
32	WOODSHOLE OCEAN INST	Kouns, C. W.	GSFC	Bowin, C. O.	NAG 5-321	3241
32	YALE UNIVERSITY	Quaide, W. L.	HQ-EL	Longhi, J.	NAGW 175	2156
33	CASE WESTERN RESERVE	Powell, J. A.	LERC	Fung, C. D.	NAG 3-301	3969
33	CITY U N Y-GRAD SCHL	McGoldrick, L. F.	HQ-EE	Pierson, W. J.	NAGW 266	3622
33	FLORIDA STATE UNIV	Rao, D. B.	GSFC	O'brien, J.	NAG 5-219	2262
33	FLORIDA STATE UNIV	Chase, R. P.	HQ-EB	Clark, A. J.	NAGW 221	2264
33	FLORIDA STATE UNIV	Thomas, R. H.	HQ-EE	O'brien, J. J.	NGT 10-004-800	2267
33	HAMPTON INSTITUTE	Esaias, W. E.	HQ-EE	Venable, D. D.	NAGW 407	4811
33	HARVARD UNIVERSITY	Halem, M.	GSFC	Robinson, A. R.	NSG 5228	3040
33	HOFSTRA UNIVERSITY	Wilson, W. S.	HQ-EE	Weissman, D. E.	NAGW 468	3721
33	INDIANA UNIV OF PA	Hoge, F. E.	GSFC	Berry, R. E.	NAG 5-614	4272
33	JOHNS HOPKINS UNIV	McGoldrick, L. F.	HQ-EE	Phillips, O. M.	NAGW 304	2820
33	LA ST U&A&M COL-BRGE	Carter, C. H.	HQ-LB	Rouse, L. J., Jr.	NGT 19-001-800	2782
33	MASS INST OF TECH	Kirk, R. G.	GSFC	Wunsch, C.	NAG 5-307	3110
33	MASS INST OF TECH	Kirk, R. G.	GSFC	Harrison, D. E.	NAG 5-322	3111
33	MASS INST OF TECH	Huang, N. E.	GSFC	Christensen, E. M.	NAG 5-612	3112
33	MASS INST OF TECH	McGoldrick, L. F.	HQ-EB	Harrison, D. E.	NGT 22-009-900	3181
33	MASS INST OF TECH	McGoldrick, L. F.	HQ-EE	Cane, M. A.	NAGW 463	3130
33	NO CAROLINA STATE U	Huang, N. E.	GSFC	Tung, C. C.	NAS 6-3018	3907
33	NO CAROLINA STATE U	Carder, K. L.	HQ-EE	Kamykowski, D.	NAGW 367	3902
33	NOVA UNIVERSITY	Kirk, R. G.	GSFC	Witte, J. M.	NAS 5-26714	2271
33	OLD DOMINION UNIV	Croswell, W. F.	LARC	Oertel, G. F.	NAG 1-189	4830
33	OREGON STATE UNIV	Carder, K. L.	HQ-EE	Small, L. F.	NAGW 305	4218
33	STANFORD UNIVERSITY	McGoldrick, L. F.	HQ-EE	Peterson, A. M.	NAGW 361	1494
33	STATE U NY-STONY BRK	Esaias, W. E.	LARC	Wilson, R. E.	NAS 1-16607	3832
33	TEXAS A&M UNIVERSITY	Szajna, E. F.	GSFC	El-sayed, S. Z.	NAS 5-22966	4557
33	TEXAS A&M UNIVERSITY	Huang, N.	GSFC	Ichiye, T.	NAS 6-2884	4559
33	UNIV CALIF-DAVIS	Rao, D. B.	GSFC	Chanmugam, G.	NAG 5-217	1704
33	UNIV CALIF-SAN DIEGO	Szajna, E. F.	GSFC	Austin, R. W.	NAS 5-26249	1850
33	UNIV CALIF-SAN DIEGO	Esaias, W. E.	LARC	Smith, R. C.	NSG 1641	1879
33	UNIV CALIF-SAN DIEGO	Esaias, W. E.	HQ-EE	Eppeley, R. W.	NAGW 458	1846
33	UNIV CALIF-SAN DIEGO	McGoldrick, L. F.	HQ-EE	Davis, R. E.	NASW 3669	1867
33	UNIV CALIF-S BARBARA	Hoge, F. E.	GSFC	Smith, R. C.	NAG 6-14	1923
33	UNIV CALIF-S BARBARA	Esaias, W. E.	HQ-EE	Smith, R. C.	NAGW 290	1926
33	UNIV OF CHICAGO	Esaias, W. E.	HQ-EE	Alberte, R. S.	NAGW 460	2485
33	UNIV COLORADO-BOLDR	Thomas, R. H.	HQ-EE	Barry, R. G.	NAGW 363	2076
33	UNIV OF DELAWARE	Huang, N. E.	GSFC	Klemas, V.	NAS 5-26915	2173
33	UNIV OF HAWAII-MANOA	McGoldrick, L. F.	HQ-EE	McCord, T. B.	NAGW 318	2413
33	UNIV OF KANSAS	Schroeder, L. C.	LARC	Moore, R. K.	NSG 1397	2739
33	UNIV OF KANSAS	Carder, K. L.	HQ-EE	Onstott, R. G.	NAGW 334	2715
33	UNIV MARYLAND-COL PK	McGoldrick, L. F.	HQ-EE	Harger, R. O.	NAGW 387	2900
33	UNIV MD-EASTRN SHORE	Huang, N. E.	GSFC	Dudis, J. J.	NAG 5-602	2978
33	UNIV OF MASS-AMHERST	McGoldrick, L. F.	HQ-EE	McIntosh, R. E.	NAGW 276	3223
33	UNIV OF MASS-AMHERST	McGoldrick, L. F.	HQ-EE	Swift, C. T.	NAGW 287	3224
33	UNIV OF MIAMI	Carder, K. L.	HQ-EB	Hirschberg, J. G.	NAGW 258	2311
33	UNIV OF MIAMI	Carder, K. L.	HQ-EB	Gordan, H. R.	NAGW 273	2312
33	UNIV NEW HAMP-DURHAM	McGoldrick, L. F.	HQ-EE	Pettigrew, N. R.	NAGW 271	3497
33	UNIV OF PENNSYLVANIA	Turkiewicz, J. M.	GSFC	Haber, F.	NAS 5-27353	4353
33	UNIV OF SO FLORIDA	Esaias, W. E.	HQ-EE	Carder, K. L.	NAGW 465	2326
33	UNIV OF SOUTHERN CAL	Carder, K. L.	HQ-EE	Kiefer, D.	NAGW 317	2013
33	UNIV OF SOUTHERN CAL	Carder, K. L.	HQ-EE	Pieper, R. E.	NAGW 335	2014
33	UNIV TEXAS-AUSTIN	McGoldrick, L. F.	HQ-EE	Tapley, B. D.	NAGW 462	4653
33	UNIV OF WASHINGTON	Grantham, W. L.	LARC	Brown, R. A.	NAG 1-149	5027

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33	UNIV OF WASHINGTON	McGoldrick, L. F.	HQ-EE	Brown, R. A.	NAGW 303	5058
33	UNIV OF WASHINGTON	McGoldrick, L. F.	HQ-EE	Katsaros, K. B.	NAGW 366	5060
33	UNIV OF WASHINGTON	Thomas, R. H.	HQ-EE	Rothrock, D. A.	NAGW 412	5061
33	UNIV OF WASHINGTON	Carder, K. L.	HQ-EE	Untersteiner, N.	NASW 3647	5072
33	UNIV WISC-MADISON	Schroeder, L. C.	LARC	Hinton, B. B.	NAG 1-118	5103
33	UNIV WISC-MILWAUKEE	Rao, D. B.	GSFC	Mortimer, C. H.	NAG 5-209	5166
33	WEST CHESTER ST COL	Hoge, F. E.	GSFC	Yungel, J.	NAS 6-3096	4381
33	WOODSHOLE OCEAN INST	Kirk, R. G.	GSFC	Chase, R. P.	NAG 5-281	3240
33	WOODSHOLE OCEAN INST	Allario, F.	LARC	Joyce, T. M.	NAG 1-91	3237
33	WOODSHOLE OCEAN INST	Saias, W. E.	LARC	Beardsley, R. C.	NAS 1-16606	3245
33	WOODSHOLE OCEAN INST	McGoldrick, L. F.	HQ-EB	Chase, R. R.	NAGW 265	3243
33	WOODSHOLE OCEAN INST	Gregg, W.	HQ-EE	Joyce, T. M.	NAGW 272	3244
33	WOODSHOLE OCEAN INST	Thomas, R. H.	HQ-EE	Hollister, C. D.	NGT 22-014-800	3247
39	ALABAMA A&M UNIV	Mooneyhan, D. W.	NSTL	Montgomery, O. L.	NAG 8-13	1000
39	ATHENS STATE COLLEGE	Fogle, V.	MSFC	Holland, L. R.	NAS 8-34432	1008
39	BOSTON COLLEGE	Birmingham, T. J.	HQ-EZ	Carovillano, R. L.	NSG 7468	2988
39	BOSTON UNIVERSITY	Smith, C.	ARC	Ventres, C. S.	NAG 2-179	2990
39	BRIGHAM YOUNG UNIV	Gordon, F.	GSFC	Miller, W.	NAS 5-26473	4741
39	COLORADO STATE UNIV	Cherrix, G. T.	GSFC	Vonderhaar, T. H.	NAS 5-22959	2040
39	CORNELL UNIVERSITY	Vitale, J. A.	HQ-ET	Philipson, W. R.	NGL 33-010-171	3696
39	GEORGIA INST OF TECH	Hurley, E. J.	GSFC	Cunwold, D. M.	NAS 5-25817	2366
39	GEORGIA INST OF TECH	Downs, S. W., Jr.	MSFC	Shackelford, R. G.	NAS 8-32397	2370
39	HAMPTON INSTITUTE	Harris, R. C.	LARC	Leung, W. H.	NAG 1-122	4808
39	HAMPTON INSTITUTE	Poole, L. R.	LARC	Venable, D. D.	NCC 1-11	4814
39	HOWARD UNIVERSITY	Hall, D.	GSFC	Day, B.	NAG 5-224	2231
39	HOWARD UNIVERSITY	Okeefe, J. A.	GSFC	Thorpe, A. M.	NAS 5-25185	2237
39	HUMBOLDT STATE UNIV	Carter, C. H.	HQ-LB	Fox, L., III	NGT 05-060-800	1356
39	IMPERIAL C SCI & TEC	Hingst, W.	LERC	Whitelaw, R.	NASW 3631	5192
39	KANSAS STATE UNIV	Browne, I. D.	JSC	Kanemasu, E. T.	NAS 9-16457	2691
39	MARSHALL UNIVERSITY	Blodget, H. W.	GSFC	Brumfield, J. O.	NAS 5-27489	5095
39	MASS INST OF TECH	Wang, J. R.	GSFC	Kong, J. A.	NAG 5-141	3102
39	MICHIGAN STATE UNIV	Tuyahov, A. J.	HQ-EL	Boylan, M. G.	NGL 23-004-083	3268
39	MISSISSIPPI STATE U	Vitale, J. A.	HQ-ET	Miller, W. F.	NGL 25-001-054	3397
39	MONTANA STATE UNIV	Whitehead, V. S.	JSC	Caprio, J. M.	NAS 9-16007	3459
39	MORGAN STATE UNIV	Tucker, C. J.	GSFC	Fan, C. J.	NAG 5-12	2847
39	NEW MEX ST U-LAS CR	Farris, G. W.	JSC	Carver, K. R.	NAS 9-95514	3588
39	NEW MEX ST U-LAS CR	Nitschke, H. A.	JSC	Blevins, B.	NAS 9-95519	3589
39	NEW MEX ST U-LAS CR	Nitschke, H. A.	JSC	Waterman, A.	NAS 9-95522	3590
39	NEW MEX ST U-LAS CR	Pels, G. F.	JSC	Carver, K. R.	NAS 9-95539	3591
39	NEW MEX ST U-LAS CR	Nitschke, H. A.	JSC	Blevins, B.	NAS 9-95541	3592
39	NEW MEX ST U-LAS CR	Lapoint, D. A.	JSC	Unavailable	NAS 9-95557	3593
39	NEW MEX ST U-LAS CR	Browne, I. D.	JSC	Chhikara, R. S.	NAS 9-16431	4855
39	OLD DOMINION UNIV	Hypes, W. D.	LARC	Kindle, E. C.	NCC 1-34	4860
39	OREGON STATE UNIV	Tuyahov, A. J.	HQ-EL	Schrumpf, B. J.	NGL 38-002-053	4223
39	PAN AMERICAN UNIV	Browne, I. D.	JSC	Lemaster, E. W.	NAG 9-61	4489
39	PAN AMERICAN UNIV	Pitts, E.	JSC	Lemaster, E. W.	NSG 9033	4490
39	PENN STATE U-UNIV PK	Schmugge, T. J.	GSFC	Carlson, T. N.	NAG 5-184	4298
39	PENN STATE U-UNIV PK	Irons, J.	GSFC	Petersen, G. W.	NAS 5-25667	4311
39	PRAIRIE VIEW A&M U	Browne, I. D.	JSC	Brams, E. A.	NSG 9006	4498
39	PURDUE UNIVERSITY	Browne, I. D.	JSC	Bauer, M. E.	NAS 9-16528	2605
39	RICE UNIVERSITY	Butler, D. M.	HQ-EE	Michel, F. C.	NAGW 482	4506
39	SO DAKOTA STATE UNIV	Schmugge, T. J.	GSFC	Harlan, J. C.	NSG 5396	4420
39	SO DAKOTA STATE UNIV	Vitale, J. A.	HQ-ET	Myers, V. I.	NGL 42-003-007	4419
39	SOUTHWESTERN UNIV	Robbins, D. E.	JSC	Morgan, T. H.	NAS 9-16670	4533
39	STANFORD UNIVERSITY	Schrom, J. S.	HQ-EP	Dunn, D.	NASW 3204	1510
39	STATE UNIV NY-ALBANY	Whitehead, V.	JSC	Duggin, M. J.	NAS 9-16783	3796
39	STATE UNIV NY-ALBANY	Weinberg, I.	LERC	Corbett, J. W.	NSG 3095	3801
39	STATE UNIV NY-ALBANY	Keller, V. W.	MSFC	Laza, G. G.	NAS 8-32893	3790
39	ST U NY COL-ONEONTA	Kerber, A. G.	GSFC	Baumann, P. R.	NAS 5-25967	3857
39	ST U NY-UPST MED CTR	Oseroff, H.	GSFC	Duggin, M. J.	NAS 5-27595	3853



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39	TEXAS A&M UNIVERSITY	Blanchard, D.	JSC	Randall, J. D.	NAS 9-14828	4572
39	TEXAS A&M UNIVERSITY	Browne, I. D.	JSC	Guseman, L. F.	NAS 9-16447	4577
39	TEXAS A&M UNIVERSITY	Browne, I. D.	JSC	Guseman, L. F.	NAS 9-16664	4581
39	TEXAS A&M UNIVERSITY	Browne, I. D.	JSC	Heilman, J. L.	NAS 9-16674	4582
39	TEXAS A&M UNIVERSITY	Actkinson, A. L.	JSC	Sielken Jr., R. L.	NAS 9-16785	4584
39	UNIV ALASKA-FAIRBNKS	Tuyahov, A. J.	HQ-EL	Miller, J. M.	NGL 02-001-092	1078
39	UNIV ALASKA-FAIRBNKS	Taylor, W. W.	HQ-EZ	Akasofu, S. I.	NSG 7281	1079
39	UNIV OF ARIZONA	Wrigley, R. C.	ARC	Schowengerdt, R. A.	NCC 2-234	1203
39	UNIV OF ARIZONA	Musick, H. B.	NSTL	Hutchinson, C. F.	NAS13-172	1199
39	UNIV OF ARIZONA	Vitale, J. A.	HQ-ET	Johnson, J. D.	NGL 03-002-313	1206
39	UNIV ARKANSAS-FAYETV	Schmugge, T.	GSFC	Halloran, J. W.	NAG 5-20	1240
39	UNIV CALIF-BERKELEY	Linlor, W. I.	ARC	Angelakos, D.	NCA 2-50006	1659
39	UNIV CALIF-BERKELEY	Norman, S. M.	ARC	Snow, T. P.	NCA 2-50103	1661
39	UNIV CALIF-BERKELEY	Butler, D. M.	HQ-EE	Hudson, M. K.	NAGW 75	1628
39	UNIV CALIF-BERKELEY	Vitale, J. A.	HQ-ET	Colwell, R. N.	NSG 7220	1696
39	UNIV CALIF-DAVIS	Cagliostro, D. E.	ARC	Smith, J. M.	NAG 2-129	1702
39	UNIV CALIF-L ANGELES	Butler, D. M.	HQ-EE	Abdulla, M. A.	NAGW 78	1757
39	UNIV CALIF-L ANGELES	Wiskerchen, M. J.	HQ-EE	Coleman, P. J., Jr.	NGL 05-007-004	1785
39	UNIV CALIF-S BARBARA	Peterson, D. L.	ARC	Strahler, A. H.	NCC 2-157	1936
39	UNIV CALIF-S BARBARA	Oseroff, H.	GSFC	Dozier, J.	NAS 5-27463	1930
39	UNIV CALIF-S BARBARA	Browne, I. D.	JSC	Botkin, D. B.	NAG 9-64	1924
39	UNIV CALIF-S BARBARA	Rambler, M.	HQ-EB	Strahler, A. H.	NAGW 323	1927
39	UNIV CALIF-S BARBARA	Tuyahov, A. J.	HQ-EL	Estes, J. E.	NAGW 455	1929
39	UNIV CALIF-S BARBARA	Carter, C. H.	HQ-LB	Strahler, A.	NGT 05-010-800	1939
39	UNIV CALIF-S BARBARA	Owens, F. C.	HQ-LB	Dozier, J.	NGT 05-010-801	1940
39	UNIV OF CENTRAL FLA	Knott, W. M.	KSC	Madsen, B. C.	NAS10-10390	2273
39	UNIV COLORADO-BOLDR	Vitale, J. A.	HQ-ET	Ives, J. D.	NGL 06-003-200	2106
39	UNIV OF DELAWARE	Oseroff, H.	GSFC	Klemas, V.	NAS 5-27580	2174
39	UNIV OF DELAWARE	Bartlett, D. S.	LARC	Klemas, V.	NCC 1-81	2175
39	UNIV OF DELAWARE	Owens, F.	HQ-LB	Wu, J.	NGT 08-001-800	2176
39	UNIV OF DENVER	Kunde, V. G.	GSFC	Goldman, A.	NAS 5-26364	2127
39	UNIV OF DENVER	Seals, R. K., Jr.	LARC	Murcray, D. G.	NSG 1432	2133
39	UNIV DIST COLUMBIA	Gross, F. C.	GSFC	Phelps, H. L.	NGR 09-050-019	2249
39	UNIV DIST COLUMBIA	Ruitberg, A.	GSFC	Lessin, I.	NGR 09-053-003	2250
39	UNIV OF FLORIDA	Uyahov, J. T.	HQ-EL	Ruth, B. E.	NSG 7236	2307
39	UNIV HOUSTON-CL LAKE	Actkinson, A. L.	JSC	Hallum, C. R.	NAS 9-16815	4632
39	UNIV OF IOWA	Fishman, J.	LARC	Carmichael, G. R.	NAG 1-36	2654
39	UNIV OF KANSAS	Schmugge, T. J.	GSFC	Ulaby, F. T.	NAG 5-30	2708
39	UNIV OF KANSAS	Browne, I. D.	JSC	Ulaby, F. T.	NAS 9-16865	2722
39	UNIV OF KANSAS	Paris, J.	JSC	Ulaby, F. T.	NCC 9-4	2735
39	UNIV OF KANSAS	Browne, I. D.	JSC	Ulaby, F. T.	NCC 9-6	2736
39	UNIV OF KANSAS	Browne, I. D.	JSC	Ulaby, F. T.	NCC 9-7	2737
39	UNIV OF KANSAS	Grantham, W. L.	LARC	Onstott, R. G.	NCC 1-51	2725
39	UNIV OF KANSAS	Tuyahov, A. J.	HQ-EL	Barr, B. G.	NGL 17-004-024	2738
39	UNIV OF KENTUCKY	Vento, D. M.	LERC	Altenkirch, R. A.	NAG 3-258	2757
39	UNIV MARYLAND-COL PK	Uccellini, L. W.	GSFC	Pitter, R. L.	NAG 5-133	2869
39	UNIV MARYLAND-COL PK	Gervin, J. C.	GSFC	Ragan, R. M.	NAS 5-26650	2913
39	UNIV MARYLAND-COL PK	Browne, I. D.	JSC	Davis, L. S.	NAS 9-16434	2927
39	UNIV MARYLAND-COL PK	Butler, D. M.	HQ-EE	Papadopoulos, K.	NAGW 81	2895
39	UNIV MARYLAND-COL PK	Tuyahov, A. J.	HQ-ET	Ragan, R. M.	NAGW 33	2894
39	UNIV MARYLAND-COL PK	Carter, C. H.	HQ-LB	Rodenhuis, D. R.	NGT 21-002-809	2956
39	UNIV OF MASS-AMHERST	Blodget, H. W.	GSFC	Finn, J. T.	NAS 5-27542	3228
39	UNIV OF MASS-AMHERST	Owens, F. C.	HQ-LB	Finn, J. T.	NGT 22-010-800	3231
39	UNIV OF MIAMI	Gibbs, B. P.	ARC	Brown, O.	NCA 2-438101	2320
39	UNIV OF MIAMI	Knott, W.	KSC	Mitsui, A.	NAS10-10531	2319
39	UNIV MICH-ANN ARBOR	Miller, E. R.	MSFC	Carignan, G. R.	NAS 8-32661	3324
39	U MINN-MNPLS-ST PAUL	Whitehead, V. S.	JSC	Lillesand, T. M.	NAS 9-16427	3373
39	U MINN-MNPLS-ST PAUL	Vitale, J. A.	HQ-EL	Hobbie, R. K.	NGL 24-005-263	3376
39	UNIV MO-COLUMBIA	Tuyahov, A. J.	HQ-EL	Johannsen, C. J.	NAGW 46	3409
39	UNIV OF MONTANA	Peterson, D. L.	ARC	Running, S.	NCA 2-475301	3460

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
39	UNIV NEBRASKA-LINCLN	Browne, I. D.	JSC	Blad, B. L.	NAS 9-16636	3467
39	UNIV NEBRASKA-LINCLN	Tuyahov, A. J.	HQ-EL	Carlson, M. P.	NGL 28-004-020	3468
39	UNIV NEBRASKA-LINCLN	Carter, C. H.	HQ-LB	Blad, B. L.	NGT 28-004-800	3470
39	UNIV N CAR-CHPL HILL	Harriss, R. C.	LARC	Martens, C. S.	NAG 1-181	3918
39	UNIV N CAR-CHPL HILL	Owens, F. C.	HQ-LB	Martens, C. S.	NGT 34-003-800	3920
39	UNIV OKLAHOMA-NORMAN	Gerlich, J. C.	GSFC	Nazur, V.	NCC 5-600	4202
39	UNIV OF RHODE ISLAND	Blodget, H. W.	GSFC	West, N.	NAS 5-27559	4400
39	UNIV OF SANTA CLARA	Jones, H. W., Jr.	ARC	Alkhatib, H.	NCA 2-685101	1980
39	UNIV SO CAROLINA-COL	Vitale, J. A.	HQ-ET	Roberson, R. E.	NSG 7504	4416
39	UNIV TEXAS-AUSTIN	Stencel, R. E.	HQ-EZ	Wheeler, J. C.	NSG 7232	4681
39	UNIV OF UTAH	Tuyahov, A. J.	HQ-EL	Ursenbach, W. O.	NAGW 95	4750
39	UNIV OF UTAH	Vitale, J. A.	HQ-ET	Ridd, M. K.	NSG 7226	4759
39	U VERMONT & ST AGR C	Blodget, H.	GSFC	Smith, G. S.	NAS 5-27534	4780
39	U VERMONT & ST AGR C	Tuyahov, A. J.	HQ-EL	Whitmore, R. A.	NSG 7453	4781
39	UNIV WISC-MADISON	Thiele, O. W.	GSFC	Suomi, V. E.	NAS 5-26345	5142
39	UNIV WISC-MADISON	Middleton, E. M.	GSFC	Scarpace, F. L.	NAS 5-26423	5143
39	UNIV WISC-MADISON	Owens, F. C.	HQ-LB	Giese, R. L.	NGT 50-002-801	5161
39	UTAH STATE UNIV	Butler, D. M.	HQ-EE	Schunk, R. W.	NAGW 77	4763
39	VIRGINIA POLY INST	Hypes, W. D.	LARC	Giles, H., Jr.	NAG 1-188	4947
39	VIRGINIA POLY INST	Sykes, G. F.	LARC	McGrath, J. E.	NAG 1-331	4969
39	VIRGINIA POLY INST	Tenney, D. R.	LARC	Shields, G.	NCC 1-10	4999
39	WOODSHOLE OCEAN INST	McGoldrick, L. F.	HQ-EB	Spencer, D. W.	NAGW 241	3242
41	ARIZONA STATE UNIV	Holmes, B. J.	LARC	Hassan, A. A.	NAG 1-338	1081
41	ARIZONA STATE UNIV	Unavailable	LARC	Meirovitch, L.	NGR 03-001-022	1110
41	ARIZONA STATE UNIV	Claus, R. W.	LERC	So, R. M.	NAG 3-260	1090
41	ARIZONA STATE UNIV	Hippensteele, S. A.	LERC	Florschuetz, L. W.	NSG 3075	1114
41	ATLANTA UNIVERSITY	Desmarais, R. N.	LARC	Bharucha-reid, A. T.	NAG 1-413	2331
41	BOSTON UNIVERSITY	Yates, E. C., Jr.	LARC	Freedman, M. I.	NAG 1-276	2989
41	BOSTON UNIVERSITY	Yates, E. C., Jr.	LARC	Morino, L.	NGR 22-004-030	2997
41	BOSTON UNIVERSITY	Owens, F. C.	HQ-LB	Morino, L.	NGT 22-004-800	2998
41	BOSTON UNIVERSITY	Carter, C. H.	HQ-LB	Morino, L.	NGT 22-004-801	2999
41	BOSTON UNIVERSITY	Carter, C. H.	HQ-LB	Morino, L.	NGT 22-004-802	3000
41	BOSTON UNIVERSITY	Carter, C. H.	HQ-LB	Udelson, D.	NGT 22-008-803	3001
41	BOSTON UNIVERSITY	Owens, F. C.	HQ-LB	Tseng, K.	NGT 22-008-804	3002
41	BOSTON UNIVERSITY	Owens, F. C.	HQ-LB	Tseng, K.	NGT 22-008-805	3003
41	BOSTON UNIVERSITY	Owens, F. C.	HQ-LB	Tseng, K.	NSG 1617	4393
41	BROWN UNIVERSITY	Townsend, J. C.	LARC	Sirovich, L.	NGT 40-002-800	4392
41	BROWN UNIVERSITY	Carter, C. H.	HQ-LB	Doepfner, T. W., Jr.	NGT 40-002-800	4392
41	CALIF INST OF TECH	Peake, D. J.	ARC	Culick, F. E.	NAG 2-194	1248
41	CALIF INST OF TECH	Starns, J. H., Jr.	LARC	Knauss, W. G.	NSG 1483	1308
41	CALIF INST OF TECH	Tacina, R.	LERC	Marble, F. E.	NAG 3-70	1249
41	CALIF INST OF TECH	Chai, A. T.	LERC	Coles, D.	NAG 3-466	1251
41	CALIF INST OF TECH	Holt, S. S.	HQ-MF	Ahrens, T. J.	NASW 3752	1289
41	CAL POLY ST U-POMONA	Christianson, R. S.	ARC	Lord, P. A.	NAG 2-49	1316
41	CAL POLY ST U-S LUIS	Talbot, P. D.	ARC	Sandlin, D. R.	NAG 2-61	1317
41	CAL POLY ST U-S LUIS	Magge, J. P.	ARC	Grimes, J. E.	NAS 2-10364	1320
41	CAL POLY ST U-S LUIS	Corsiglia, V. R.	ARC	Sandlin, D. R.	NCC 2-226	1322
41	CAL POLY ST U-S LUIS	Wilson, S. B.	ARC	Sandlin, D. R.	NCC 2-236	1323
41	CAL POLY ST U-S LUIS	Dudley, M. R.	ARC	Hoffmann, J. A.	NCC 2-239	1324
41	CAL POLY ST U-S LUIS	Koenig, D. G.	ARC	Sandlin, D. R.	NCC 2-255	1325
41	CAL POLY ST U-S LUIS	Snyder, W. J.	ARC	Sandlin, D. R.	NCC 2-258	1326
41	CAL POLY ST U-S LUIS	Schroers, L. G.	ARC	Sandlin, D. R.	NCC 2-259	1327
41	CAL POLY ST U-S LUIS	Koenig, D. G.	ARC	Hoffmann, J. A.	NSG 2391	1329
41	CAL POLY ST U-S LUIS	Myers, L. P.	DFRF	Carpenter, T. W.	NAG 4-4	1318
41	CAL POLY ST U-S LUIS	Washington, H. P.	DFRF	Sandlin, D. R.	NCC 4-1	1328
41	CAL POLY ST U-S LUIS	Peterson, V. L.	ARC	Cebeci, T.	NAG 2-204	1337
41	CAL STATE U-LG BEACH	Bushnell, D. M.	LARC	Cebeci, T.	NAS 1-17312	1339
41	CAL STATE U-LG BEACH	Shih, K. C.	ARC	Hriber, E. J.	NCA 2-554301	1344
41	CAL STATE U-NRTHRDGE	Kielb, R. E.	LERC	Griffin, J. H.	NAG 3-231	4235
41	CARNEGIE-MELLON UNIV	Hingst, W. R.	LERC	Greber, I.	NAG 3-61	3937
41	CASE WESTERN RESERVE	Hingst, W. R.	LERC	Greber, I.	NAG 3-102	3941
41	CASE WESTERN RESERVE	Hingst, W. R.	LERC	Greber, I.	NAG 3-102	3941

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41	CASE WESTERN RESERVE	Riddlebaugh, S. M.	LERC	Greber, I.	NAG 3-171	3945
41	CASE WESTERN RESERVE	Riddlebaugh, S. M.	LERC	Greber, I.	NAG 3-251	3958
41	CASE WESTERN RESERVE	Sockol, P. M.	LERC	Reshotko, E.	NAG 3-270	3962
41	CASE WESTERN RESERVE	Chamis, C. C.	LERC	Adams, M. L.	NAG 3-331	3971
41	CASE WESTERN RESERVE	Wood, J. R.	LERC	Prahl, J. M.	NAG 3-440	3986
41	CASE WESTERN RESERVE	Stubbs, R. M.	LERC	Lavery, J. E.	NAG 3-482	3994
41	CITY COLLEGE OF N Y	Bushnell, D. M.	LARC	Johnson, J. A.	NAG 1-293	3611
41	CITY COLLEGE OF N Y	Bushnell, D. M.	LARC	Johnson, J. A., III	NAG 1-377	3612
41	CITY COLLEGE OF N Y	Boldman, D. R.	LERC	Raj, R.	NAG 3-122	3613
41	CLEMSON UNIV-CLEMSON	Doggett, R. V., Jr.	LARC	Rudisill, C. S.	NSG 1411	4411
41	CLEVELAND STATE UNIV	Johnson, G. M.	LERC	Chang, S. H.	NAG 3-339	4029
41	COLLEGE OF WM & MARY	Kumar, A.	LARC	Zang, T. A.	NAG 1-109	4785
41	COLORADO STATE UNIV	Sockol, P. M.	LERC	Sadeh, W. Z.	NSG 3127	2046
41	COLUMBIA UNIVERSITY	Harris, J. E.	LARC	Eiseman, P. R.	NAG 1-355	3634
41	COLUMBIA UNIVERSITY	Harris, R. L., Sr.	LARC	Galanter, E.	NCC 1-5	3652
41	COLUMBIA UNIVERSITY	Mixson, J. S.	LARC	Vaicaitis, R.	NSG 1450	3659
41	CORNELL UNIVERSITY	Tauber, M. E.	ARC	Caughey, D. A.	NAG 2-13	3667
41	CORNELL UNIVERSITY	Tauber, M. E.	ARC	Caughey, D. A.	NAG 2-218	3672
41	CORNELL UNIVERSITY	Tauber, M. E.	ARC	George, A. R.	NCC 2-173	3694
41	CORNELL UNIVERSITY	Chapman, G. T.	ARC	Lumley, J. L.	NSG 2382	3708
41	CORNELL UNIVERSITY	Farassat, F.	LARC	George, A. R.	NAG 1-107	3664
41	CORNELL UNIVERSITY	Farassat, F.	LARC	George, A. R.	NAG 1-376	3666
41	CORNELL UNIVERSITY	Johnson, G. M.	LERC	Caughey, D. A.	NAG 3-19	3673
41	CORNELL UNIVERSITY	Eid, L. R.	LERC	Moore, F. K.	NAG 3-349	3676
41	DREXEL UNIVERSITY	Price, D. B.	LARC	Calise, A. J.	NAG 1-243	4248
41	DREXEL UNIVERSITY	Price, D. B.	LARC	Calise, A. J.	NSG 1496	4266
41	DREXEL UNIVERSITY	Humenik, F.	LERC	Cernansky, N. P.	NAG 3-1	4253
41	EMBRY-RIDDLE AERO U	Shaughnessy, J. D.	LARC	Wells, D. C.	NCC 1-66	2252
41	FLORIDA STATE UNIV	Stone, J. R.	LERC	Tam, C. K.	NAG 3-182	2260
41	GEORGE WASHINGTON U	Chapman, G. T.	ARC	Hafez, M. M.	NAG 2-40	2192
41	GEORGE WASHINGTON U	Demarais, R. N.	LARC	Liebowitz, H.	NAG 1-13	2185
41	GEORGE WASHINGTON U	Jones, R. A.	LARC	Liebowitz, H.	NAG 1-136	2186
41	GEORGE WASHINGTON U	Gardner, J. E.	LARC	Liebowitz, H.	NAG 1-199	2190
41	GEORGE WASHINGTON U	Duberg, J. E.	LARC	Liebowitz, H.	NAS 1-14605	2195
41	GEORGE WASHINGTON U	Morgan, H. G.	LARC	Liebowitz, H.	NCC 1-14	2202
41	GEORGE WASHINGTON U	Foughner, J. T., Jr.	LARC	Hesselink, L.	NCC 1-24	2204
41	GEORGE WASHINGTON U	Suit, W. T.	LARC	Liebowitz, H.	NCC 1-29	2205
41	GEORGE WASHINGTON U	Prior, E. J.	LARC	Liebowitz, H. L.	NCC 1-44	2208
41	GEORGE WASHINGTON U	Hohl, F.	LARC	Liebowitz, H.	NCC 1-47	2209
41	GEORGE WASHINGTON U	McComb, H. G., Jr.	LARC	Liebowitz, H.	NGR 09-010-078	2210
41	GEORGE WASHINGTON U	Morgan, H. G.	LARC	Liebowitz, H.	NGR 09-010-085	2211
41	GEORGE WASHINGTON U	Suit, W. T.	LARC	Liebowitz, H.	NSG 1161	2214
41	GEORGE WASHINGTON U	Harvey, W. D.	LARC	Liebowitz, H.	NSG 1585	2216
41	GEORGIA INST OF TECH	Hodges, D. H.	ARC	Rehfield, L. W.	NAG 2-238	2350
41	GEORGIA INST OF TECH	Levine, D. M.	GSFC	Wilson, B. J.	NAS 5-27257	2367
41	GEORGIA INST OF TECH	Scheiman, J.	LARC	McMahon, H. M.	NAG 1-40	2338
41	GEORGIA INST OF TECH	Lester, H. C.	LARC	Zinn, B. T.	NAG 1-133	2341
41	GEORGIA INST OF TECH	Scheiman, J.	LARC	McMahon, H. M.	NAG 1-306	2342
41	GEORGIA INST OF TECH	Nixon, M. W.	LARC	Rehfield, L. W.	NAG 1-398	2345
41	GEORGIA INST OF TECH	Saule, A. V.	LERC	Zinn, B. T.	NAG 3-67	2352
41	GEORGIA INST OF TECH	Chamis, C. C.	LERC	Atturi, S. N.	NAG 3-346	2356
41	GEORGIA INST OF TECH	Sockol, P. M.	LERC	Johnston, W. A.	NSG 3260	2386
41	HARVEY MUDD COLLEGE	Gupta, K. K.	ARC	Tanenbaum, B. S.	NAG 2-240	1349
41	HARVEY MUDD COLLEGE	Clary, G. R.	ARC	Phillips, J. R.	NCA 2-283201	1350
41	HARVEY MUDD COLLEGE	Gupta, K. K.	DFRF	Tanenbaum, B. S.	NSG 4029	1355
41	HOWARD UNIVERSITY	Barrowman, J. S.	GSFC	Fan, D.	NAS 5-24242	2236
41	HOWARD UNIVERSITY	Taylor, L. W.	LARC	Choudhury, A. K.	NAG 1-130	2219
41	ILL INST OF TECH	Adelman, H. M.	LARC	Haftka, R. T.	NSG 1266	2443
41	ILL INST OF TECH	Hefner, J. N.	LARC	Nagib, H. M.	NSG 1591	2444
41	ILL INST OF TECH	Chamis, C. C.	LERC	Daniel, I. M.	NAG 3-423	2441

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41	IND U-PURDUE-INDAPLS	Sokol, P. M.	LERC	Bodonyi, R. J.	NSG 3183	2566
41	IND U-PURDUE-INDAPLS	Chima, R. U.	LERC	Ecer, A.	NSG 3294	2567
41	IOWA STATE UNIV	Olson, L. E.	ARC	James, W. D.	NAG 2-30	2632
41	IOWA STATE UNIV	Presley, L. L.	ARC	Cook, W. J.	NAG 2-106	2633
41	IOWA STATE UNIV	Murphy, J. D.	ARC	Pletcher, R. H.	NAG 2-152	2635
41	IOWA STATE UNIV	Marvin, J. G.	ARC	Tannehill, J. C.	NAG 2-245	2636
41	IOWA STATE UNIV	Chaussee, D. S.	ARC	Tannehill, J. C.	NCA 2-340301	2643
41	IOWA STATE UNIV	Olson, L. E.	ARC	Vogel, J. M.	NCC 2-19	2645
41	IOWA STATE UNIV	Murphy, J. D.	ARC	Cook, W. J.	NCC 2-200	2647
41	IOWA STATE UNIV	Rakich, J. U.	ARC	Tannehill, J. C.	NGR 16-002-038	2648
41	IOWA STATE UNIV	Malcolm, G. N.	ARC	James, W. D.	NSG 2091	2653
41	IOWA STATE UNIV	Salas, M. D.	LARC	Anderson, D. A.	NCC 1-17	2644
41	IOWA STATE UNIV	Strazisar, A. J.	LERC	Okiishi, T. H.	NAG 3-356	2637
41	IOWA STATE UNIV	Graves, R. A., Jr.	HQ-RT	Anderson, D. A.	NGT 16-002-801	2650
41	ISRAEL INST OF TECH	Schiff, L. B.	ARC	Katz, J.	NAGW 218	5198
41	JOHNS HOPKINS UNIV	Rubetin, M. W.	ARC	Corrsin, S.	NSG 2303	2844
41	JOHNS HOPKINS UNIV	Carter, C. H.	HQ-LB	Davidson, A. F.	NGT 21-001-800	2839
41	LEHIGH UNIVERSITY	Batterton, P. G.	LERC	Rockwell, D. O.	NSG 3162	4281
41	MASS INST OF TECH	Piziali, R. A.	ARC	Miller, R. H.	NAG 2-47	3060
41	MASS INST OF TECH	Hicks, R. M.	ARC	Murman, E. M.	NAG 2-105	3064
41	MASS INST OF TECH	Chapman, G. C.	ARC	Murman, E. M.	NAG 2-115	3065
41	MASS INST OF TECH	Smith, C. A.	ARC	Hubbard, J. E., Jr.	NAG 2-182	3069
41	MASS INST OF TECH	Tobias, L.	ARC	Simpson, R. W.	NAG 2-190	3070
41	MASS INST OF TECH	Johnson, W. R.	ARC	Widnall, S. E.	NAG 2-251	3075
41	MASS INST OF TECH	Nagel, D. C.	ARC	Simpson, R. W.	NAS 2-10720	3134
41	MASS INST OF TECH	Johnson, W. R.	ARC	Widnall, S. E.	NSG 2142	3189
41	MASS INST OF TECH	Johnson, W. R.	ARC	Ham, N. D.	NSG 2266	3190
41	MASS INST OF TECH	Hwang, P. H.	GSFC	Staelin, D. H.	NAS 5-22929	3136
41	MASS INST OF TECH	Bland, S. R.	LARC	Harris, W. L.	NAG 1-60	3047
41	MASS INST OF TECH	Montgomery, R. C.	LARC	Vandervelde, W. E.	NAG 1-126	3051
41	MASS INST OF TECH	Kelley, J. R.	LARC	Athans, M.	NAG 1-140	3052
41	MASS INST OF TECH	Kilgore, R. A.	LARC	Covert, E. E.	NAG 1-206	3054
41	MASS INST OF TECH	Anderson, G. Y.	LARC	Murman, E. M.	NAG 1-229	3055
41	MASS INST OF TECH	Bland, S. R.	LARC	Harris, W. L.	NAG 1-329	3057
41	MASS INST OF TECH	Waggoner, E. G.	LARC	Murman, E. M.	NAG 1-358	3058
41	MASS INST OF TECH	Harris, R. L., Sr.	LARC	Hsieh, K. C.	NCC 1-23	3162
41	MASS INST OF TECH	Dwoyer, D. L.	LARC	Abarbanel, S. S.	NCC 1-45	3163
41	MASS INST OF TECH	Howell, W. E.	LARC	Simpson, R. W.	NGL 22-009-640	3173
41	MASS INST OF TECH	Boyden, R. P.	LARC	Covert, E. E.	NSG 1502	3185
41	MASS INST OF TECH	Chima, R. V.	LERC	Thompkins, W. T., Jr.	NAG 3-9	3076
41	MASS INST OF TECH	Schock, H. J.	LERC	Heywood, J. B.	NAG 3-82	3078
41	MASS INST OF TECH	Kielb, R. E.	LERC	Crawley, E. F.	NAG 3-200	3080
41	MASS INST OF TECH	Kielb, R. E.	LERC	Dugunkji, J.	NAG 3-214	3081
41	MASS INST OF TECH	Rohde, J. E.	LERC	Epstein, A. H.	NAG 3-334	3088
41	MASS INST OF TECH	Chamis, C. C.	LERC	Mandell, J. F.	NAG 3-377	3091
41	MASS INST OF TECH	Spera, D. A.	LERC	Harris, W. L.	NAG 3-378	3092
41	MASS INST OF TECH	Strazisar, A. J.	LERC	Covert, E. E.	NGL 22-009-383	3170
41	MASS INST OF TECH	Adamczyk, J. J.	LERC	Crawley, E. F.	NSG 3079	3194
41	MASS INST OF TECH	Adamczyk, J. J.	LERC	Greitzer, E. M.	NSG 3208	3195
41	MASS INST OF TECH	Janetzke, D. C.	LERC	Dugundji, J.	NSG 3303	3198
41	MASS INST OF TECH	Graves, R. A., Jr.	HQ-RT	Murman, E. M.	NGT 22-009-901	3182
41	MICHIGAN STATE UNIV	Rubetin, M. W.	ARC	Foss, J. F.	NAG 2-86	3254
41	MICHIGAN STATE UNIV	Hefner, J. N.	LARC	Falco, R. E.	NAG 1-221	3250
41	MICHIGAN STATE UNIV	Yu, J. C.	LARC	Foss, J. F.	NAG 1-287	3251
41	MICHIGAN STATE UNIV	Hefner, J. N.	LARC	Falco, R. E.	NAG 1-302	3252
41	MICHIGAN STATE UNIV	Yu, J. C.	LARC	Foss, J. F.	NAG 1-367	3253
41	MISSISSIPPI STATE U	Jacobs, P. F.	ARC	Koenig, K.	NAG 1-362	3387
41	MISSISSIPPI STATE U	Horstman, C. C.	ARC	Whitefield, D. L.	NCC 2-184	3396
41	MISSISSIPPI STATE U	Holmes, B. J.	LARC	Bull, G.	NAG 1-3	3385
41	MISSISSIPPI STATE U	Thames, F. C.	LARC	Whitfield, D. L.	NAG 1-226	3386

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41	MISSISSIPPI STATE U	Thames, F. C.	LARC	Thompson, J. F.	NGR 25-001-055	3398
41	MISSISSIPPI STATE U	Liu, C. H.	LARC	Bennett, A. G.	NSG 1623	3402
41	MONTANA STATE UNIV	Horstman, C. C.	ARC	Demetriades, A.	NAG 2-37	3458
41	NEW YORK UNIVERSITY	Hicks, R. M.	ARC	Garabedian, P. R.	NGR 33-016-201	3738
41	NEW YORK UNIVERSITY	Maestrello, L.	LARC	Bayliss, A.	NAG 1-155	3727
41	NEW YORK UNIVERSITY	Maestrello, L.	LARC	Ting, L.	NAG 1-314	3728
41	NEW YORK UNIVERSITY	Liu, C. H.	LARC	Ting, L.	NCC 1-58	3736
41	NEW YORK UNIVERSITY	Graves, R. A., Jr.	HQ-RT	Garabedian, P. R.	NGT 33-016-800	3739
41	NO CAR A&T STATE U	Lindemann, A. M.	LARC	Klett, D. E.	NAG 1-406	3886
41	NO CAROLINA STATE U	Harris, J. E.	LARC	Hassan, H. A.	NAG 1-244	3896
41	NO CAROLINA STATE U	Ricketts, R. H.	LARC	Turner, C. D.	NAS 1-17229	3903
41	NO CAROLINA STATE U	South, J. C., Jr.	LARC	Hassan, H. A.	NCC 1-22	3908
41	NO CAROLINA STATE U	Schoonover, W. E., Jr.	LARC	Dejarnette, F. R.	NCC 1-46	3909
41	NO CAROLINA STATE U	Holbrook, G. T.	LARC	Smetana, F. O.	NSG 1584	3916
41	NO CAROLINA STATE U	Stone, J. R.	LERC	Nagel, R. T.	NAG 3-189	3899
41	NO CAROLINA STATE U	Burstadt, P. L.	LERC	Boles, M. A.	NAG 3-229	3900
41	NO CAROLINA STATE U	Hwang, D. P.	LERC	Boles, M.	NAG 3-343	3901
41	NO CAROLINA STATE U	Owens, F. C.	HQ-LB	Turner, C. D.	NGT 34-002-800	3913
41	OHIO STATE UNIV	Stroub, R. H.	ARC	Velkoff, H. R.	NCA 2-565001	4087
41	OHIO STATE UNIV	Holst, T. L.	ARC	Nakamura, S.	NCA 2-565101	4088
41	OHIO STATE UNIV	Stroub, R. H.	ARC	Velkoff, H. R.	NCA 2-565102	4089
41	OHIO STATE UNIV	Corsiglia, V. R.	ARC	Lee, J. D.	NCC 2-240	4091
41	OHIO STATE UNIV	Bergeron, H. P.	LARC	Chapman, G. C.	NAG 1-238	4060
41	OHIO STATE UNIV	Holmes, B. J.	LARC	Bragg, M. B.	NAG 1-342	4062
41	OHIO STATE UNIV	Greene, G. C.	LARC	Gregorek, G. M.	NAS 1-15680	4081
41	OHIO STATE UNIV	Bergeron, H. P.	LARC	Weislogel, G. S.	NAS 1-15969	4082
41	OHIO STATE UNIV	Holmes, B. J.	LARC	Gregorek, G. M.	NAS 1-16388	4083
41	OHIO STATE UNIV	Shaw, R. J.	LERC	Gregorek, G. M.	NAG 3-28	4068
41	OHIO STATE UNIV	Shaw, R. J.	LERC	Lee, J. D.	NAG 3-109	4070
41	OHIO STATE UNIV	Shaw, R. J.	LERC	Lee, J. D.	NAG 3-374	4074
41	OHIO STATE UNIV	Brown, G. V.	LERC	Leissa, A. W.	NAG 3-424	4075
41	OHIO STATE UNIV	Mitchell, G. A.	LERC	Gregorek, G. M.	NSG 3247	4101
41	OHIO UNIVERSITY	Edwards, F. G.	ARC	McFarland, R. H.	NAG 2-231	4108
41	OHIO UNIVERSITY	Adams, J. J.	LARC	McFarland, R. H.	NAG 1-124	4107
41	OHIO UNIVERSITY	Adams, J. J.	LARC	McFarland, R. H.	NAS 1-17368	4109
41	OKLAHOMA STATE UNIV	Steinle, F. W., Jr.	ARC	Reed, T. D.	NAG 2-76	4185
41	OKLAHOMA STATE UNIV	Miller, S. A.	ARC	Wiggins, K. E.	NAS 2-10467	4188
41	OLD DOMINION UNIV	Bushnell, D. M.	LARC	Grosch, C. E.	NAG 1-96	4823
41	OLD DOMINION UNIV	Moss, J. N.	LARC	Tiwari, S. N.	NAG 1-120	4825
41	OLD DOMINION UNIV	Bushnell, D. M.	LARC	Ash, R. L.	NAG 1-121	4826
41	OLD DOMINION UNIV	Harvey, W. D.	LARC	Goglia, G. L.	NAG 1-228	4835
41	OLD DOMINION UNIV	Harvey, W. D.	LARC	Goglia, G. L.	NAG 1-294	4839
41	OLD DOMINION UNIV	Johnson, C. B.	LARC	Goglia, G. L.	NAG 1-334	4843
41	OLD DOMINION UNIV	Dagenhart, J. R.	LARC	Verma, A. K.	NAG 1-340	4845
41	OLD DOMINION UNIV	Zoby, E. V.	LARC	Goglia, G. L.	NAG 1-346	4846
41	OLD DOMINION UNIV	Dagenhart, J. R.	LARC	Goglia, G. L.	NAG 1-353	4848
41	OLD DOMINION UNIV	Massenberg, S. E.	LARC	Tiwani, S. N.	NAG 1-363	4849
41	OLD DOMINION UNIV	Erickson, W. D.	LARC	Unavailable	NAS 1-15648	4851
41	OLD DOMINION UNIV	Prior, E. J.	LARC	Unavailable	NAS 1-17099	4854
41	OLD DOMINION UNIV	Spady, A. A., Jr.	LARC	Kirby, R. H.	NCC 1-57	4862
41	OLD DOMINION UNIV	Davis, R. C.	LARC	Prabhakaran, R.	NCC 1-60	4863
41	OLD DOMINION UNIV	Liu, C. H.	LARC	Tiwari, S. N.	NCC 1-65	4864
41	OLD DOMINION UNIV	Smith, R. E.	LARC	Tiwari, S. N.	NCC 1-68	4865
41	OLD DOMINION UNIV	Tolson, R. H.	LARC	Roberts, A. S., Jr.	NGR 47-003-052	4868
41	OLD DOMINION UNIV	Dixon, S. C.	LARC	Thornton, E. A.	NSG 1167	4873
41	OLD DOMINION UNIV	Frink, N. T.	LARC	Kuhlman, J. M.	NSG 1357	4877
41	OLD DOMINION UNIV	Creedon, J. F.	LARC	Tcheng, P.	NSG 1480	4879
41	OLD DOMINION UNIV	Dwoyer, D. L.	LARC	Cooke, C. H.	NSG 1517	4880
41	OLD DOMINION UNIV	Yates, E. C., Jr.	LARC	Kandil, O. A.	NSG 1560	4881
41	OLD DOMINION UNIV	Luckring, J. M.	LARC	Chaturvedi, S. K.	NSG 1561	4882

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41	OLD DOMINION UNIV	Jones, R. L.	LARC	Mielke, R. R.	NSG 1650	4885
41	OREGON STATE UNIV	Savino, J. M.	LERC	Wilson, R. E.	NAG 3-278	4213
41	PENN STATE U-UNIV PK	Norum, T. D.	LARC	Daniel, O. H.	NAG 1-4	4286
41	PENN STATE U-UNIV PK	Chambers, J. R.	LARC	McCormick, B. W.	NAG 1-73	4287
41	PENN STATE U-UNIV PK	Stephens, D. G.	LARC	Maynard, J. D.	NAG 1-216	4288
41	PENN STATE U-UNIV PK	Gatski, T. B.	LARC	Morris, P. J.	NSG 1580	4339
41	PENN STATE U-UNIV PK	Shaw, L. M.	LERC	Lakshminarayana, B.	NSG 3012	4340
41	PENN STATE U-UNIV PK	Sockol, D. M.	LERC	Lakshminarayana, B.	NSG 3212	4341
41	PENN STATE U-UNIV PK	Sanger, N. L.	LERC	Deutsch, S.	NSG 3264	4342
41	PENN STATE U-UNIV PK	Strazisar, A. J.	LERC	Morris, P. J.	NSG 3265	4343
41	PENN STATE U-UNIV PK	Sockol, P. M.	LERC	Lakshminarayana, B.	NSG 3266	4344
41	PENN STATE U-UNIV PK	Graves, R. A., Jr.	HQ-RT	Lakshminarayana, B.	NGT 39-009-802	4333
41	POLY INST OF NY	Yu, Y. H.	ARC	Isom, M. P.	NCC 2-172	3747
41	PRINCETON UNIVERSITY	Hicks, R. M.	ARC	Jameson, A.	NAG 2-96	3514
41	PRINCETON UNIVERSITY	Talbot, P. D.	ARC	Curtiss, H. C.	NAG 2-98	3515
41	PRINCETON UNIVERSITY	Horstman, C. C.	ARC	Settles, G. S.	NAG 2-109	3516
41	PRINCETON UNIVERSITY	Decker, W. A.	ARC	Curtiss, H. C.	NAG 2-244	3517
41	PRINCETON UNIVERSITY	Cross, J. L.	ARC	Miles, R. B.	NCC 2-94	3552
41	PRINCETON UNIVERSITY	Hefner, J. N.	LARC	Curtiss, H. C.	NAG 1-108	3511
41	PRINCETON UNIVERSITY	Salas, M. D.	LARC	Jameson, A.	NAG 1-186	3513
41	PRINCETON UNIVERSITY	Bryant, W. H.	LARC	Stengel, R. F.	NAS 1-15758	3539
41	PRINCETON UNIVERSITY	Abbott, T. S.	LARC	Stengel, R. F.	NAS 1-15764	3540
41	PRINCETON UNIVERSITY	Blanchard, R. C.	LARC	Bienkowski, G. K.	NAS 1-17234	3541
41	PRINCETON UNIVERSITY	Eide, D. G.	LARC	Miles, R. B.	NCC 1-64	3551
41	PRINCETON UNIVERSITY	Howell, W. E.	LARC	Stengel, R. F.	NGL 31-001-252	3554
41	PRINCETON UNIVERSITY	Schy, A. A.	LARC	Stengel, R. F.	NSG 1587	3558
41	PRINCETON UNIVERSITY	Blanchard, R. C.	LARC	Bienkowski, G. K.	NSG 1630	3559
41	PRINCETON UNIVERSITY	Szaniszlo, A. J.	LERC	Bracco, F. V.	NAG 3-8	3518
41	PRINCETON UNIVERSITY	Rice, W.	LERC	Sweet, L. M.	NAG 3-110	3519
41	PRINCETON UNIVERSITY	Brown, G. V.	LERC	Bendiksen, O. O.	NAG 3-308	3522
41	PRINCETON UNIVERSITY	Anderson, D. N.	LERC	Bracco, F. V.	NAG 3-353	3524
41	PRINCETON UNIVERSITY	Cassidy, J. F.	LERC	Jahn, R. G.	NAG 3-425	3526
41	PRINCETON UNIVERSITY	Hicks, G.	HQ-RT	Bogdonoff, S.	NAGW 240	3535
41	PURDUE UNIVERSITY	Duke, E. L.	ARC	Schmidt, D. K.	NAG 2-228	2578
41	PURDUE UNIVERSITY	Berry, D. T.	ARC	Schmidt, D. K.	NAG 4-1	2591
41	PURDUE UNIVERSITY	Goorjian, P.	ARC	Yang, H. T.	NCA 2-605201	2607
41	PURDUE UNIVERSITY	Carmichael, R.	ARC	Anderson, D. C.	NCC 2-146	2609
41	PURDUE UNIVERSITY	Franklin, J. A.	ARC	Schmidt, D. K.	NCC 2-192	2610
41	PURDUE UNIVERSITY	Franklin, J. A.	ARC	Schmidt, D. K.	NCC 2-243	2612
41	PURDUE UNIVERSITY	Carmichael, R. L.	ARC	Anderson, D. C.	NSG 2192	2615
41	PURDUE UNIVERSITY	Mixson, J. S.	LARC	Crocker, M. J.	NAG 1-58	2568
41	PURDUE UNIVERSITY	Swanson, R. C.	LARC	McCarthy, D. R.	NAG 1-116	2569
41	PURDUE UNIVERSITY	Newsom, J. R.	LARC	Weisshaar, T. A.	NAG 1-157	2570
41	PURDUE UNIVERSITY	Grantham, W. D.	LARC	Schmidt, D. K.	NAG 1-254	2573
41	PURDUE UNIVERSITY	Newsom, J. R.	LARC	Schmidt, D. K.	NAG 1-305	2574
41	PURDUE UNIVERSITY	Edwards, J. W.	LARC	Yang, H. T.	NAG 1-372	2576
41	PURDUE UNIVERSITY	Williams, J. G.	LARC	Sun, C. T.	NAG 1-381	2577
41	PURDUE UNIVERSITY	Lehtinen, B.	LERC	Leininger, G. G.	NAG 3-17	2579
41	PURDUE UNIVERSITY	Steinke, R. J.	LERC	Murthy, S. N.	NAG 3-62	2581
41	PURDUE UNIVERSITY	Steinke, R. J.	LERC	Murthy, S. N.	NAG 3-204	2582
41	PURDUE UNIVERSITY	Chamis, C. C.	LERC	Sun, C. T.	NAG 3-211	2583
41	PURDUE UNIVERSITY	Tacina, R. R.	LERC	Lefebvre, A. H.	NAG 3-226	2584
41	PURDUE UNIVERSITY	Boldman, D. R.	LERC	Fleeter, S.	NAG 3-412	2589
41	PURDUE UNIVERSITY	Mitchell, G. A.	LERC	Sullivan, J. P.	NSG 3135	2616
41	PURDUE UNIVERSITY	Chamis, C. C.	LERC	Sun, C. T.	NSG 3185	2617
41	PURDUE UNIVERSITY	Bosque, M. A.	LERC	Lefebvre, A. H.	NSG 3213	2618
41	PURDUE UNIVERSITY	Boldman, D. R.	LERC	Fleeter, S.	NSG 3285	2620
41	RENSSELAER POLY-NY	Maestrello, L.	LARC	Nagamatsu, H. T.	NAG 1-330	3753
41	RENSSELAER POLY-NY	Harris, C. D.	LARC	Nagamatsu, H. T.	NSG 1624	3773
41	RENSSELAER POLY-NY	Thompson, R. L.	LERC	Krempl, E.	NAG 3-262	3764

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41	RENSSELAER POLY-NY	Vanfossen, G. J.	LERC	Mayle, R. E.	NSG 3262	3774
41	SAN JOSE STATE UNIV	Acree, C. W.	ARC	Agarwal, R. B.	NCA 2-675102	1387
41	SAN JOSE STATE UNIV	Miura, H.	ARC	Wang, J. C.	NCA 2-675201	1389
41	SAN JOSE STATE UNIV	Miura, H.	ARC	Wang, J. C.	NCA 2-675306	1396
41	SAN JOSE STATE UNIV	Jinkerson, J. H.	ARC	Wang, J. C.	NCC 2-83	1411
41	SAN JOSE STATE UNIV	Wingrove, R. C.	ARC	Wang, J. C.	NCC 2-123	1414
41	SAN JOSE STATE UNIV	Wingrove, R. C.	ARC	Moriarty, G.	NCC 2-161	1421
41	SAN JOSE STATE UNIV	Talbot, P. D.	ARC	Wang, J. C.	NCC 2-267	1437
41	STANFORD UNIVERSITY	Chapman, G. T.	ARC	Cantrell, B.	NAG 2-21	1448
41	STANFORD UNIVERSITY	Peterson, V. L.	ARC	Reynolds, W. C.	NAG 2-29	1449
41	STANFORD UNIVERSITY	Johnson, D. A.	ARC	Kline, S. J.	NAG 2-42	1451
41	STANFORD UNIVERSITY	Aoyagi, K.	ARC	Karamcheti, K.	NAG 2-111	1455
41	STANFORD UNIVERSITY	Soderman, P. T.	ARC	Karamcheti, K.	NAG 2-127	1457
41	STANFORD UNIVERSITY	Morse, H. A.	ARC	Debra, D.	NAG 2-156	1459
41	STANFORD UNIVERSITY	Hicks, R. M.	ARC	Karamcheti, K.	NAG 2-173	1462
41	STANFORD UNIVERSITY	Corsiglia, V. R.	ARC	Shevell, R. S.	NAG 2-187	1463
41	STANFORD UNIVERSITY	Erzberger, H.	ARC	Bryson, A. E.	NAG 2-191	1464
41	STANFORD UNIVERSITY	Petersen, K. L.	ARC	Franklin, G. F.	NAG 2-223	1465
41	STANFORD UNIVERSITY	Deckert, W.	ARC	Karamcheti, K.	NAG 2-236	1466
41	STANFORD UNIVERSITY	Saito, J.	ARC	McCluskey, E. J.	NAG 2-246	1467
41	STANFORD UNIVERSITY	Lomax, H.	ARC	Steger, J. L.	NCA 2-745005	1512
41	STANFORD UNIVERSITY	Leonard, A.	ARC	Baganoff, D.	NCA 2-745101	1515
41	STANFORD UNIVERSITY	Schiff, L. B.	ARC	Steger, J. L.	NCA 2-745204	1522
41	STANFORD UNIVERSITY	Lomax, H.	ARC	Steger, J. L.	NCA 2-745205	1523
41	STANFORD UNIVERSITY	Chyu, W. J.	ARC	Steger, J. L.	NCA 2-745301	1527
41	STANFORD UNIVERSITY	Stevens, K. G.	ARC	Baganoff, D.	NCA 2-745302	1528
41	STANFORD UNIVERSITY	Chyu, W. J.	ARC	Cantwell, B. J.	NCA 2-745305	1531
41	STANFORD UNIVERSITY	Lomax, H.	ARC	Hughes, T. J.	NCA 2-745307	1533
41	STANFORD UNIVERSITY	Kutler, P.	ARC	Cantwell, B. J.	NCA 2-745309	1535
41	STANFORD UNIVERSITY	Lomax, H.	ARC	Van Dyke, M. D.	NCA 2-745312	1538
41	STANFORD UNIVERSITY	McCroskey, W. J.	ARC	Bershader, D.	NCA 2-745314	1540
41	STANFORD UNIVERSITY	Schmitz, F. H.	ARC	Debra, D.	NCA 2-745315	1541
41	STANFORD UNIVERSITY	Johnson, W. R.	ARC	Karamcheti, K.	NCC 2-13	1543
41	STANFORD UNIVERSITY	Rubeshin, M. W.	ARC	Ferziger, J. H.	NCC 2-15	1544
41	STANFORD UNIVERSITY	Carr, L. W.	ARC	Reynolds, W. G.	NCC 2-21	1545
41	STANFORD UNIVERSITY	Deckert, W. H.	ARC	Karamcheti, K.	NCC 2-55	1551
41	STANFORD UNIVERSITY	Marvin, J. G.	ARC	Karamcheti, K.	NCC 2-59	1552
41	STANFORD UNIVERSITY	Koenig, D. G.	ARC	Karamcheti, K.	NCC 2-74	1553
41	STANFORD UNIVERSITY	Atencio, A.	ARC	Karamcheti, K.	NCC 2-75	1554
41	STANFORD UNIVERSITY	Schairer, E. T.	ARC	Karamcheti, K.	NCC 2-77	1555
41	STANFORD UNIVERSITY	McKenzie, R. L.	ARC	Bershader, D.	NCC 2-82	1556
41	STANFORD UNIVERSITY	Davis, S. S.	ARC	Karamcheti, K.	NCC 2-89	1557
41	STANFORD UNIVERSITY	Franklin, J. A.	ARC	Bryson, A. E., Jr.	NCC 2-106	1559
41	STANFORD UNIVERSITY	Presley, L. L.	ARC	Karamcheti, K.	NCC 2-149	1565
41	STANFORD UNIVERSITY	Deckert, W. H.	ARC	Roberts, L. R.	NCC 2-150	1566
41	STANFORD UNIVERSITY	Yu, Y. H.	ARC	Hesselink, P. I.	NCC 2-188	1568
41	STANFORD UNIVERSITY	Aoyagi, K.	ARC	Karamcheti, K.	NCC 2-198	1569
41	STANFORD UNIVERSITY	Soderman, P. T.	ARC	Karamcheti, K.	NCC 2-212	1570
41	STANFORD UNIVERSITY	Snyder, W. J.	ARC	Karamcheti, K.	NCC 2-219	1572
41	STANFORD UNIVERSITY	Ardena, M.	ARC	Breakwell, J. V.	NCC 2-247	1577
41	STANFORD UNIVERSITY	Saito, J.	ARC	McCluskey, E. J.	NCC 2-250	1578
41	STANFORD UNIVERSITY	Franklin, J. A.	ARC	Debra, D. B.	NSG 2400	1602
41	STANFORD UNIVERSITY	Gilyard, G. B.	DFRF	Debra, D. B.	NSG 4002	1603
41	STANFORD UNIVERSITY	Edwards, J. W.	LARC	Debra, D. B.	NAG 1-105	1439
41	STANFORD UNIVERSITY	Jernell, L. S.	LARC	Shevell, R. S.	NAG 1-202	1441
41	STANFORD UNIVERSITY	Rudy, D. H.	LARC	Steger, J. L.	NAG 1-269	1444
41	STANFORD UNIVERSITY	Maddalon, D. V.	LARC	Reed, H. L.	NAG 1-402	1447
41	STANFORD UNIVERSITY	Doggett, R. V., Jr.	LARC	Ashley, H.	NGL 05-020-243	1583
41	STANFORD UNIVERSITY	Johnson, G. M.	LERC	Steger, J. L.	NAG 3-275	1474
41	STANFORD UNIVERSITY	Bosque, M. A.	LERC	Hanson, R. K.	NAG 3-285	1475

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41	STANFORD UNIVERSITY	Chamis, C. C.	LERC	Hughes, T. J.	NAG 3-319	1476
41	STANFORD UNIVERSITY	Carter, C. H.	HQ-LB	Steger, J. L.	NGT 05-020-802	1594
41	STANFORD UNIVERSITY	Owens, F. C.	HQ-LB	Bershafer, D.	NGT 05-020-806	1598
41	STANFORD UNIVERSITY	Owens, F. C.	HQ-LB	Steele, C. R.	NGT 05-020-807	1599
41	STANFORD UNIVERSITY	Graves, R. A., Jr.	HQ-RT	Chapman, D. R.	NGT 05-020-801	1593
41	STATE UNIV NY-BUFFAL	Owens, F. C.	HQ-LB	George, W. K.	NGT 33-183-800	3816
41	ST U NY COL-ONEONTA	Allison, D. O.	LARC	Ram, R. B.	NAG 1-131	3856
41	SYRACUSE UNIVERSITY	Seiner, J. M.	LARC	Dosanjh, D.	NAG 1-129	3859
41	SYRACUSE UNIVERSITY	Stone, J. R.	MSFC	Dosanjh, D. S.	NAG 3-202	3860
41	TEXAS A&M UNIV SYSTM	Margason, R. J.	LARC	Cross, E. J.	NAG 1-326	4537
41	TENNESSEE STATE UNIV	Randall, J. I.	MSFC	Isibor, E. I.	NAG 8-22	4427
41	TEXAS A&M UNIVERSITY	Gambucci, B. J.	ARC	Brusse, J. C.	NAS 2-10272	4556
41	TEXAS A&M UNIVERSITY	Shockey, G. A.	ARC	Hall, G. F.	NCA 2-773101	4587
41	TEXAS A&M UNIVERSITY	Shockey, G. A.	ARC	Ward, D. T.	NCA 2-773201	4588
41	TEXAS A&M UNIVERSITY	Watts, M. E.	ARC	Miley, S.	NCA 2-773301	4589
41	TEXAS A&M UNIVERSITY	Corsiglia, V. R.	ARC	Chevalier, H.	NCC 2-78	4590
41	TEXAS A&M UNIVERSITY	Shockey, G. A.	ARC	Hall, G. F.	NCC 2-260	4592
41	TEXAS A&M UNIVERSITY	Yu, J. C.	LARC	Gerhold, C. H.	NAG 1-11	4538
41	TEXAS A&M UNIVERSITY	Dow, M. B.	LARC	Horn, W. J.	NAG 1-184	4540
41	TEXAS A&M UNIVERSITY	Koenig, R. W.	LARC	Miley, S. J.	NAG 1-214	4541
41	TEXAS A&M UNIVERSITY	Holmes, B. J.	LARC	Ward, D. T.	NAG 1-309	4542
41	TEXAS A&M UNIVERSITY	Stickle, J. W.	LARC	Cross Jr., E. J.	NAG 1-344	4543
41	TEXAS A&M UNIVERSITY	Johnson, C. B.	LARC	MacHa, J. M.	NAG 1-417	4544
41	TEXAS A&M UNIVERSITY	Everhart, J. L.	LARC	Carlson, L. A.	NSG 1174	4597
41	TEXAS A&M UNIVERSITY	Shaw, R. J.	LERC	Korkan, K. D.	NAG 3-242	4549
41	TEXAS A&M UNIVERSITY	Hughes, C. E.	LERC	Korkan, K. D.	NAG 3-272	4550
41	TEXAS A&M UNIVERSITY	Dittmar, J. H.	LERC	Korkan, K. D.	NAG 3-354	4553
41	TUSKEGEE INSTITUTE	Civinskas, K. C.	LERC	Jenkins, R. M.	NSG 3295	1022
41	TUSKEGEE INSTITUTE	Randall, J. L.	MSFC	Harris, V. G.	NAG 8-20	1017
41	UNIV OF AKRON	Chamis, C. C.	LERC	Fertis, D. G.	NAG 3-50	4111
41	UNIV OF AKRON	Chamis, C. C.	LERC	Chang, T. Y.	NAG 3-307	4116
41	UNIV OF AKRON	Berke, L.	LERC	Robinson, D. N.	NAG 3-379	4118
41	UNIV OF AKRON	Shaw, R. J.	LERC	Potapczuk, M. G.	NAG 3-416	4119
41	UNIV OF AKRON	Chamis, C. C.	LERC	Adams, M. L.	NSG 3283	4126
41	UNIV OF ARIZONA	Bach, R. E., Jr.	ARC	Parks, E. K.	NCA 2-40301	1201
41	UNIV OF ARIZONA	Hefner, J. N.	LARC	Kinney, R. B.	NAG 1-141	1120
41	UNIV OF ARIZONA	Chamis, C. C.	LERC	Gallagher, R. H.	NAG 3-45	1128
41	UNIV OF ARIZONA	Groeneweg, J. F.	LERC	Kerschen, E. J.	NAG 3-357	1129
41	UNIV OF ARIZONA	Holdeman, J. D.	LERC	Petersen, R. E.	NAG 3-430	1131
41	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Tomasko, M.	NAGW 55	1151
41	UNIV OF ARIZONA	Goorjian, P. M.	HQ-RT	Fung, K. Y.	NGT 03-002-800	1214
41	UNIV CALIF-BERKELEY	Marvin, J. G.	ARC	Holt, M.	NCC 2-179	1673
41	UNIV CALIF-BERKELEY	Lee, G.	ARC	Holt, M.	NGR 05-003-451	1683
41	UNIV CALIF-BERKELEY	Marek, C. J.	LERC	Oppenheim, A. K.	NAG 3-131	1611
41	UNIV CALIF-DAVIS	Callas, G. P.	ARC	Hess, R. A.	NAG 2-221	1703
41	UNIV CALIF-DAVIS	Rubesin, M. W.	ARC	Kollmann, W.	NCC 2-186	1713
41	UNIV CALIF-DAVIS	Berry, D. T.	ARC	Hess, R. A.	NCC 2-241	1714
41	UNIV CALIF-L ANGELES	Miura, H.	ARC	Friedmann, P. P.	NAG 2-116	1740
41	UNIV CALIF-L ANGELES	Warmbrodt, W.	ARC	Friedmann, P. P.	NAG 2-209	1741
41	UNIV CALIF-L ANGELES	Soderman, P. T.	ARC	Meecham, W. C.	NAG 2-214	1742
41	UNIV CALIF-L ANGELES	Miura, H.	ARC	Friedmann, P. P.	NAG 2-226	1744
41	UNIV CALIF-L ANGELES	Miura, H.	ARC	Schmit, L. A.	NCA 2-390301	1780
41	UNIV CALIF-L ANGELES	Soderman, P.	ARC	Meecham, W. C.	NSG 2290	1796
41	UNIV CALIF-L ANGELES	Iliff, K. W.	DFRF	Balakrishnan, A. V.	NSG 4015	1798
41	UNIV CALIF-L ANGELES	Rudy, D. H.	LARC	Osher, S. J.	NAG 1-270	1737
41	UNIV CALIF-L ANGELES	Whitlow, W., Jr.	LARC	Osher, S. J.	NAG 1-273	1738
41	UNIV CALIF-L ANGELES	Young, W. H.	LARC	Friedmann, P.	NSG 1578	1795
41	UNIV CALIF-SAN DIEGO	Wales, W. W.	MSFC	Arnold, J. R.	NAS 8-35037	1862
41	UNIV OF CINCINNATI	Hodges, D. H.	ARC	Crespo Da Silva, M. R.	NAG 2-38	4129
41	UNIV OF CINCINNATI	Erzberger, H.	ARC	Slater, G. L.	NAG 2-175	4130



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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
41	UNIV OF CINCINNATI	Rakich, J. V.	ARC	Davis, R. T.	NCA 2-130101	4139
41	UNIV OF CINCINNATI	Swanson, R. C.	LARC	Rubin, S. G.	NAG 1-8	4127
41	UNIV OF CINCINNATI	McLallin, K. L.	LERC	Tabakoff, W.	NAG 3-26	4131
41	UNIV OF CINCINNATI	Katsanis, T.	LERC	Ghia, K. N.	NAG 3-194	4134
41	UNIV OF CINCINNATI	Adamczyk, J. J.	LERC	Rubin, S. G.	NAG 3-397	4136
41	UNIV OF CINCINNATI	Johnston, G. D.	MSFC	Brown, D. L.	NAS 8-34503	4138
41	UNIV OF CINCINNATI	Graves, R. A., Jr.	HQ-RT	Rubin, S. G.	NGT 36-004-800	4141
41	UNIV COLORADO-BOLDR	Holst, T. L.	ARC	Chow, C. Y.	NCA 2-170202	2100
41	UNIV COLORADO-BOLDR	Kwak, D.	ARC	Chow, C. Y.	NCA 2-170302	2102
41	UNIV OF CONNECTICUT	Stainback, P. C.	LARC	Uberoi, M. S.	NAG 1-59	2049
41	UNIV OF CONNECTICUT	Warmbrodt, W.	ARC	Molusis, J.	NAG 2-213	2138
41	UNIV OF CONNECTICUT	Olsen, W.	LERC	Bowley, W. W.	NAG 3-64	2139
41	UNIV OF DAYTON	Strazisar, A. J.	LERC	Bennett, J. C.	NAG 3-336	2142
41	UNIV OF DAYTON	Weinstein, L. M.	LARC	Harris, J. S.	NAG 1-310	4149
41	UNIV OF DAYTON	Weinstein, L. M.	LARC	Grokay, M. C.	NAS 1-17522	4152
41	UNIV OF DELAWARE	Shaw, R. J.	LERC	Luers, J. K.	NAG 3-65	4150
41	UNIV OF FLORIDA	Dow, M. B.	LARC	Pipes, R. B.	NAG 1-281	2164
41	UNIV OF FLORIDA	Malcolm, G. N.	ARC	Clarkson, M. H.	NCC 2-23	2299
41	UNIV OF FLORIDA	Koenig, D. G.	ARC	Fearn, R. F.	NCC 2-133	2300
41	UNIV OF FLORIDA	Aoyagi, K.	ARC	Fearn, R. L.	NSG 2288	2305
41	UNIV OF FLORIDA	Margason, R. J.	LARC	Fearn, R. L.	NAG 1-245	2281
41	UNIV OF FLORIDA	Margason, R. J.	LARC	Fearn, R. L.	NAG 1-368	2282
41	UNIV OF FLORIDA	Carter, C. H.	HQ-LB	Clarkson, M.	NGT 10-005-800	2301
41	UNIV OF FLORIDA	Carter, C. H.	HQ-LB	Fearn, R. L.	NGT 10-005-803	2303
41	UNIV HOUSTON-HOUSTON	Maestrello, L.	LARC	Nadkarni, A. A.	NSG 1475	4624
41	UNIV HOUSTON-HOUSTON	Stone, J. R.	LERC	Hussain, A. K.	NAG 3-408	4606
41	UNIV HOUSTON-HOUSTON	Stone, J. R.	MSFC	Hussain, A. K.	NAG 3-198	4605
41	UNIV ILLINOIS-URBANA	Somers, D. M.	LARC	Ormsbee, A. I.	NAG 1-76	2514
41	UNIV ILLINOIS-URBANA	Baker, C. E.	LERC	Strehlow, R. A.	NAG 3-60	2521
41	UNIV OF IOWA	Marvin, J. G.	ARC	Ramaprian, B. R.	NAG 2-110	2657
41	UNIV OF IOWA	Skillman, D.	GSFC	Shawhan, S.	NAS 5-25690	2675
41	UNIV OF IOWA	Giles, G. L.	LARC	Haug, E. J.	NAG 1-215	2656
41	UNIV OF IOWA	Johnson, G. M.	LERC	Chen, C. J.	NSG 3305	2689
41	UNIV OF KANSAS	Stroub, R. H.	ARC	Fortin, P.	NCC 2-92	2727
41	UNIV OF KANSAS	Cozzolongo, J. V.	ARC	Schweikhard, W. G.	NCC 2-107	2728
41	UNIV OF KANSAS	Harper, M.	ARC	Schweikhard, W. G.	NCC 2-110	2729
41	UNIV OF KANSAS	Stroub, R. H.	ARC	Fortin, P. E.	NCC 2-112	2730
41	UNIV OF KANSAS	Stroub, R. H.	ARC	Lan, C. E.	NCC 2-175	2731
41	UNIV OF KANSAS	Franklin, J. A.	ARC	Roskam, J.	NCC 2-242	2732
41	UNIV OF KANSAS	Ayers, T. G.	ARC	Schweikhard, W. G.	NCC 4-3	2734
41	UNIV OF KANSAS	Jenkins, J. M.	ARC	Smith, H.	NSG 4008	2743
41	UNIV OF KANSAS	Burcham, F. W.	ARC	Schweikhard, W. G.	NSG 4028	2745
41	UNIV OF KANSAS	Wilson, E. J.	DFRF	Roskam, J.	NSG 4019	2744
41	UNIV OF KANSAS	Frink, N. T.	LARC	Lan, C. E.	NAG 1-75	2693
41	UNIV OF KANSAS	Gilbert, W. P.	LARC	Lan, C. E.	NAG 1-134	2694
41	UNIV OF KANSAS	Williams, L. J.	LARC	Roskam, J.	NAG 1-205	2696
41	UNIV OF KANSAS	Williams, L. J.	LARC	Downing, D. R.	NAG 1-282	2697
41	UNIV OF KANSAS	Henderson, W. P.	LARC	Lan, C. E.	NAG 1-308	2698
41	UNIV OF KANSAS	Bergeron, H. P.	LARC	Downing, D.	NAG 1-324	2699
41	UNIV OF KANSAS	Williams, L. J.	LARC	Roskan, J.	NAG 1-345	2700
41	UNIV OF KANSAS	Gainer, T. G.	LARC	Lan, C. E.	NAG 1-396	2701
41	UNIV OF KANSAS	Morris, D. J.	LARC	Wentz, W. H.	NAG 1-401	2702
41	UNIV OF KANSAS	Holmes, B. J.	LARC	Greeley, R.	NAS 1-16363	2717
41	UNIV OF KANSAS	Stephens, D. G.	LARC	Roskam, J.	NCC 1-6	2724
41	UNIV OF KANSAS	Bryant, W. H.	LARC	Downing, D. R.	NCC 1-79	2726
41	UNIV OF KANSAS	Lamar, J. E.	LARC	Lan, C. E.	NSG 1629	2740
41	UNIV OF KANSAS	Holmes, B. J.	LARC	Roskam, J.	NSG 1633	2741
41	UNIV OF KANSAS	Neumann, H. E.	LERC	Booth, F. W.	NAG 3-11	2704
41	UNIV OF KANSAS	Straight, D. M.	LERC	Schweikhard, W. G.	NAG 3-85	2706
41	UNIV OF KANSAS	Shaw, R. J.	LERC	Schweikhard, W. G.	NAG 3-273	2707

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41	UNIV OF MAINE-ORONO	Davidson, J. R.	LARC	Mall, S.	NCC 1-70	2799
41	UNIV OF MANCHESTER	Malcolm, G. N.	ARC	Lamont, P. J.	NCCW 3	5193
41	UNIV MARYLAND-COL PK	Walsh, M. J.	LARC	Wallace, J. M.	NAG 1-24	2855
41	UNIV MARYLAND-COL PK	Bushnell, D. M.	LARC	Bernard, P. S.	NAG 1-230	2858
41	UNIV MARYLAND-COL PK	Mantay, W. R.	LARC	Chopra, I.	NAG 1-375	2860
41	UNIV MARYLAND-COL PK	Drummond, J. P.	LARC	Anderson, J. D.	NCC 1-41	2932
41	UNIV MARYLAND-COL PK	Dicarlo, D. J.	LARC	Winkelmann, A. E.	NSG 1570	2966
41	UNIV MARYLAND-COL PK	Steinberg, R.	LERC	Bleck, R.	NAG 3-444	2310
41	UNIV OF MIAMI	Lee, G.	ARC	Vest, C. M.	NAG 2-118	3280
41	UNIV MICH-ANN ARBOR	Bullock, G. D.	GSFC	Hays, P. B.	NAS 5-25691	3317
41	UNIV MICH-ANN ARBOR	Tanner, J. A.	LARC	Clark, S. K.	NSG 1607	3340
41	UNIV MICH-ANN ARBOR	Hirschbein, M. S.	LERC	Kikuchi, N.	NAG 3-388	3284
41	UNIV MICH-ANN ARBOR	Willis, E. A.	LERC	Van Gunst, R. W.	NAG 3-421	3286
41	UNIV MICH-ANN ARBOR	Chapman, G. T.	ARC	Moran, J. P.	NAG 2-4	3356
41	U MINN-MNPLS-ST PAUL	Adams, W. M., Jr.	LARC	Garrard, W. L.	NAG 1-217	3354
41	U MINN-MNPLS-ST PAUL	Brown, J. L.	ARC	Miles, J. B.	NCC 2-199	3414
41	UNIV MO-COLUMBIA	Holst, T. L.	ARC	Weintraub, D. J.	NCA 2-450201	3426
41	UNIV MO-ROLLA	Holmes, B. J.	LARC	Selberg, B. P.	NAG 1-26	3415
41	UNIV MO-ROLLA	Watson, W. R.	LARC	Eversman, W.	NAG 1-198	3416
41	UNIV MO-ROLLA	Powell, C. A.	LARC	Koval, L. R.	NAG 1-240	3417
41	UNIV MO-ROLLA	Mayes, W. H.	LARC	Eversman, W.	NAG 1-394	3419
41	UNIV MO-ROLLA	Hefner, J. N.	LARC	Patterson, G. K.	NSG 1452	3428
41	UNIV MO-ROLLA	Baumeister, K. J.	LERC	Eversman, W.	NAG 3-178	3420
41	UNIV MO-ROLLA	Bland, S. R.	LARC	Fromme, J. A.	NAG 1-84	3475
41	UNIV NEVADA-L VEGAS	Clary, G. R.	ARC	Chisholm, J. P.	NCC 2-134	3479
41	UNIV OF NEVADA-RENO	Johnson, D. A.	ARC	Rose, W. C.	NSG 2291	3481
41	UNIV OF NEVADA-RENO	Hwang, D. P.	LERC	Chou, D. C.	NAG 3-207	3597
41	UNIV OF NEW MEXICO	Somers, D. M.	LARC	Mueller, T. J.	NSG 1419	2627
41	UNIV OF NOTRE DAME	Steinle, F. W., Jr.	ARC	Pejack, E. R.	NAG 2-192	1958
41	UNIV OF PACIFIC	Reinhardt, W.	ARC	Topp, W.	NCA 2-588202	1962
41	UNIV OF PACIFIC	Culbertson, P. E.	HQ-AD	Fletcher, J. C.	NASW 3571	4368
41	UNIV OF PITTSBURGH	Weinstein, L. M.	LARC	Thompson, B. J.	NAG 1-312	3864
41	UNIV OF ROCHESTER	Rubesin, M. W.	ARC	Higuchi, H.	NCC 2-98	1991
41	UNIV OF SANTA CLARA	Davis, S. S.	ARC	Aggarwal, H. A.	NCC 2-191	1997
41	UNIV OF SANTA CLARA	Sandercock, D. M.	LERC	Roberts, W. B.	NAG 3-212	1975
41	UNIV OF SANTA CLARA	Ladson, C. L.	LARC	Goodyer, M. J.	NSG 7172	5196
41	UNIV OF SOUTHAMPTON	Boyden, R. P.	LARC	Goodyer, M. J.	NSG 7523	5197
41	UNIV OF SOUTHAMPTON	Fichter, W. B.	LARC	Miller, R. K.	NAG 1-235	1998
41	UNIV OF SOUTHERN CAL	Steinle, F. W., Jr.	ARC	Wu, J. M.	NAG 2-71	4431
41	UNIV TENNESSEE-KNOXV	Schairer, E. T.	ARC	Wu, J. M.	NAG 2-193	4432
41	UNIV TENNESSEE-KNOXV	Leonard, A.	ARC	Steinhoff, J.	NCA 2-772301	4453
41	UNIV TENNESSEE-KNOXV	Lawing, P. L.	LARC	Wu, J. M.	NAG 1-303	4429
41	UNIV TENNESSEE-KNOXV	Bland, S. R.	LARC	Kimble, K. R.	NSG 1224	4461
41	UNIV TENNESSEE-KNOXV	Baumeister, K. J.	LERC	White, J. W.	NAG 3-18	4433
41	UNIV TENNESSEE-KNOXV	Shaw, R. J.	LERC	Keshock, E. G.	NAG 3-83	4434
41	UNIV TENNESSEE-KNOXV	Hingst, W. R.	LERC	Wu, J. M.	NAG 3-233	4435
41	UNIV TENNESSEE-KNOXV	Hingst, W. R.	LERC	Wu, J. M.	NAG 3-364	4437
41	UNIV TENNESSEE-KNOXV	Chang, S. C.	LERC	Steinhoff, J.	NAG 3-398	4440
41	UNIV TENNESSEE-KNOXV	Gladden, H. J.	LERC	Schulz, R.	NAS 3-23278	4444
41	UNIV TENNESSEE-KNOXV	Owens, F. C.	HQ-LB	Wu, J. M.	NGT 43-001-806	4460
41	UNIV TEXAS-AUSTIN	Marvin, J. G.	ARC	Bertin, J. J.	NCC 2-189	4673
41	UNIV TEXAS-AUSTIN	Goodrich, W. D.	JSC	Bertin, J. J.	NAS 9-13680	4664
41	UNIV TEXAS-AUSTIN	Gracey, C.	LARC	Speyer, J. L.	NAG 1-384	4635
41	UNIV TEXAS-AUSTIN	Chamis, C. C.	LERC	Spanos, P. D.	NAG 3-210	4641
41	UNIV TEXAS-AUSTIN	Sockol, P. M.	LERC	Dulikravic, G. S.	NAG 3-317	4643
41	UNIV TEXAS-AUSTIN	Chamis, C. C.	LERC	Oder, J. T.	NAG 3-329	4644
41	UNIV TEXAS-AUSTIN	Bullock, G.	GSFC	Heelis, R. A.	NAS 5-26068	4702
41	UNIV TEXAS-DALLAS	Hoffman, R. A.	GSFC	Winningham, J. D.	NAS 5-26070	4703
41	UNIV TEXAS-DALLAS	Bullock, G. D.	GSFC	Hanson, W. B.	NAS 5-26071	4704
41	UNIV TEXAS-DALLAS	Shaw, R. J.	LERC	Dewitt, K. J.	NAG 3-72	4159
41	UNIV OF TOLEDO					

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41	UNIV OF TOLEDO	Hingst, W. R.	LERC	Keith, T. G., Jr.	NAG 3-309	4162
41	UNIV OF TOLEDO	Donovan, L. F.	LERC	White, P. R.	NAG 3-429	4167
41	UNIV OF TOLEDO	Brown, G. V.	LERC	Keith, T. G., Jr.	NSG 3139	4176
41	UNIV OF VIRGINIA	Northam, G. B.	LARC	McDaniel, J. C.	NAG 1-373	4899
41	UNIV OF VIRGINIA	Taylor, R. T.	LARC	Kugitman, A. R.	NAS 1-16286	4914
41	UNIV OF VIRGINIA	Owens, F. C.	HQ-LB	Pilkey, W. D.	NGT 47-005-800	4921
41	UNIV OF WALES	Stroud, W. J.	LARC	Williams, F. W.	NCCW 2	5195
41	UNIV OF WASHINGTON	Lee, G.	ARC	Childs, M. E.	NGR 48-002-141	5074
41	UNIV OF WASHINGTON	Putnam, L. E.	LARC	MacCormack, R. W.	NAS 1-17170	5066
41	UNIV OF WASHINGTON	Hingst, W. R.	LERC	Childs, M. E.	NAG 3-256	5035
41	UNIV OF WASHINGTON	Hingst, W. R.	LERC	Childs, M. E.	NAG 3-376	5036
41	UNIV WISC-MILWAUKEE	Viegas, J. R.	ARC	Amano, R. S.	NAG 2-160	5165
41	UNIV OF WYOMING	Dow, M. B.	LARC	Adams, D. F.	NAG 1-272	5167
41	UNIV OF WYOMING	O'brien, T. K.	LARC	Odum, E. M.	NAG 1-351	5169
41	VILLANOVA UNIVERSITY	Crabill, N. L.	LARC	Goldberg, J. H.	NAS 1-16095	4380
41	VIRGINIA POLY INST	Marvin, J. G.	ARC	Pierce, F. J.	NSG 2301	5021
41	VIRGINIA POLY INST	Newsom, J. R.	LARC	Anderson, L. R.	NAG 1-80	4934
41	VIRGINIA POLY INST	Hefner, J. N.	LARC	Schetz, J. A.	NAG 1-119	4937
41	VIRGINIA POLY INST	Sobieski, J. E.	LARC	Hallauer, W. L.	NAG 1-145	4943
41	VIRGINIA POLY INST	Starnes, J. H.	LARC	Haftka, R. T.	NAG 1-168	4945
41	VIRGINIA POLY INST	Starnes, J. H.	LARC	Duke, J. C.	NAG 1-193	4949
41	VIRGINIA POLY INST	Starnes, J. H., Jr.	LARC	Johnson, E. R.	NAG 1-201	4950
41	VIRGINIA POLY INST	Gracey, C.	LARC	Kelley, H. J.	NAG 1-203	4951
41	VIRGINIA POLY INST	Zoby, E. V.	LARC	Lewis, C. H.	NAG 1-220	4952
41	VIRGINIA POLY INST	Adelman, H. M.	LARC	Haftka, R. T.	NAG 1-224	4953
41	VIRGINIA POLY INST	O'brien, T. K.	LARC	Stinchcomb, W. W.	NAG 1-232	4956
41	VIRGINIA POLY INST	Frink, N. T.	LARC	Marchman, J. F., III	NAG 1-274	4962
41	VIRGINIA POLY INST	Maddalon, D. V.	LARC	Saric, W. S.	NAG 1-280	4963
41	VIRGINIA POLY INST	Dwoyer, D. L.	LARC	Grossman, B.	NAG 1-289	4964
41	VIRGINIA POLY INST	Williams, J. G.	LARC	Post, D.	NAG 1-291	4965
41	VIRGINIA POLY INST	Zoby, E. V.	LARC	Lewis, C. H.	NAG 1-298	4966
41	VIRGINIA POLY INST	Maddalon, D. V.	LARC	Saric, W. S.	NAG 1-299	4967
41	VIRGINIA POLY INST	Bradley, P. F.	LARC	Grossman, B.	NAG 1-337	4970
41	VIRGINIA POLY INST	Williams, J. G.	LARC	Post, D.	NAG 1-359	4972
41	VIRGINIA POLY INST	Shuart, M. J.	LARC	Jones, R. M.	NAG 1-389	4974
41	VIRGINIA POLY INST	Chestnutt, D.	LARC	Fuller, C. R.	NAG 1-390	4975
41	VIRGINIA POLY INST	Massenberg, S. E.	LARC	Nystrom, L. A.	NAG 1-393	4976
41	VIRGINIA POLY INST	Barnwell, R. W.	LARC	Saric, W. S.	NCC 1-71	5003
41	VIRGINIA POLY INST	Hefner, J. N.	LARC	Nayfeh, A. H.	NSG 1255	5013
41	VIRGINIA POLY INST	Yates, E. C., Jr.	LARC	Mook, D. T.	NSG 1262	5014
41	VIRGINIA POLY INST	Creedon, J. F.	LARC	Vanlandingham, H. F.	NSG 1354	5015
41	VIRGINIA POLY INST	Hefner, J. N.	LARC	Saric, W. S.	NSG 1608	5019
41	VIRGINIA POLY INST	Krejsa, E. A.	LERC	Mahan, J. R.	NAG 3-124	4980
41	VIRGINIA POLY INST	Chamis, C. C.	LERC	Reddy, J. N.	NAG 3-208	4982
41	VIRGINIA POLY INST	Brown, G. V.	LERC	Haftka, R. T.	NAG 3-347	4986
41	VIRGINIA POLY INST	Flemings, D. P.	LERC	Mitchell, L. D.	NSG 3239	5022
41	VIRGINIA POLY INST	Carter, C. H.	HQ-LB	Marchman, J. F.	NGT 47-004-800	5005
41	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	Telionis, D. P.	NGT 47-004-801	5006
41	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	Marchman, J. F.	NGT 47-004-802	5007
41	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	Schetz, J. A.	NGT 47-004-803	5008
41	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	O'brien, W. F.	NGT 47-004-805	5010
41	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	Greesman, B.	NGT 47-004-806	5011
41	WASHINGTON UNIVERSTY	Young, W. H., Jr.	LARC	Peters, D. A.	NAG 1-250	3431
41	WASHINGTON UNIVERSTY	Williams, J. G.	LARC	Hahn, H. T.	NAG 1-295	3432
41	WAYNE STATE UNIV	Maestrello, L.	LARC	Chow, P. L.	NAG 1-113	3346
41	WICHITA STATE UNIV	Holmes, B. J.	LARC	Wentz, W. H.	NAG 1-114	2746
41	WICHITA STATE UNIV	Weidner, J. P.	LARC	Zumwalt, G. W.	NCC 1-31	2749
41	WICHITA STATE UNIV	Rogers, R. C.	LARC	Zumwalt, G. W.	NSG 1575	2750
41	WICHITA STATE UNIV	Schmidt, H. W.	LERC	Zumwalt, G. W.	NAG 3-284	2747
41	WICHITA STATE UNIV	Savino, J. M.	LERC	Wentz, W. H., Jr.	NSG 3277	2751

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
42	AUBURN UNIV-AUBURN	Owens, F. C.	HQ-LB	Sforzini, R. H.	NGT 01-003-800	1013
42	CITY COLLEGE OF N Y	Montgomery, R. C.	LARC	Thau, F. E.	NAG 1-6	3610
42	COLLEGE OF WM & MARY	Price, D. B.	LARC	Rublein, G. T.	NAG 1-209	4787
42	MASS INST OF TECH	Hibbard, W. D.	GSFC	Bradt, H. V.	NAS 5-27575	3145
42	MASS INST OF TECH	Stokes, J. W.	MSFC	Akin, D. L.	NAS 8-34959	3152
42	MASS INST OF TECH	Venneri, S. L.	HQ-RT	Mar, J. W.	NAGW 21	3115
42	NO CAR A&T STATE U	Montgomery, R. C.	LARC	Abu-saba, E.	NAG 1-405	3885
42	OHIO STATE UNIV	Saviro, J. M.	LERC	Gregorek, G. M.	NAG 3-330	4072
42	OLD DOMINION UNIV	Montgomery, R. C.	LARC	McRee, G. J.	NAG 1-318	4842
42	OLD DOMINION UNIV	Kumar, A.	LARC	Tiwari, S. N.	NAS 1-16931	4853
42	PRAIRIE VIEW A&M U	Kennedy, R. C.	JSC	Greaux, A. E.	NAS 9-16899	4491
42	PRINCETON UNIVERSITY	Kalshoven, J.	GSFC	Gunn, J. E.	NAG 5-241	3529
42	STANFORD UNIVERSITY	Lemke, L. G.	ARC	Powell, J. D.	NCC 2-29	1546
42	STANFORD UNIVERSITY	Montgomery, R. C.	LARC	Cannon, R. H., Jr.	NAG 1-97	1438
42	STANFORD UNIVERSITY	Montgomery, R. C.	LARC	Ashley, H.	NAG 1-236	1442
42	STANFORD UNIVERSITY	Diesposti, R. S.	LERC	Breakwell, J. V.	NAG 3-63	1470
42	STANFORD UNIVERSITY	Lynch, J. T.	HQ-EE	Banks, P. M.	NAGW 235	1488
42	UNIV CALIF-SAN DIEGO	Hibbard, W. B.	GSFC	Rothschild, R. E.	NAS 5-27602	1857
42	UNIV OF CHICAGO	Fimmel, R. O.	ARC	Simpson, J. A.	NAS 2-11126	2486
42	UNIV COLORADO-BOLDR	Jackson, R. W.	ARC	Stuart, J. R.	NAG 2-178	2052
42	UNIV COLORADO-BOLDR	Jackson, R. W.	ARC	Stuart, J. R.	NAG 2-197	2053
42	UNIV COLORADO-BOLDR	Stengle, T. H.	GSFC	Lawrence, G. M.	NAS 5-27359	2090
42	UNIV OF IOWA	Fimmel, R. O.	ARC	Vanallen, J. A.	NAS 2-11125	2670
42	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Jones, E.	NGT 21-002-815	2962
42	UNIV OF PENNSYLVANIA	Woolford, B. J.	JSC	Badler, N. I.	NAS 9-16634	4356
42	UNIV OF PITTSBURGH	Kerslake, W. R.	LERC	McWilliams, P. A.	NAS 3-22662	4365
42	UNIV STHN COLORADO	Callas, G. P.	ARC	Carestia, R. A.	NCC 2-41	2134
42	UNIV TENNESSEE-KNOXV	McMillion, J. M.	MSFC	Hung, J. C.	NAS 8-34426	4450
42	UNIV TENNESSEE-KNOXV	Owens, F. C.	HQ-LB	Keefer, D.	NGT 43-001-801	4455
42	UNIV TEXAS-AUSTIN	Hughes, W. E.	GSFC	Silverberg, E.	NASW 3296	4670
42	UNIV OF VIRGINIA	Horner, G. C.	LARC	Pilkey, W. D.	NAG 1-137	4890
42	UNIV OF WASHINGTON	Conway, E. J.	LARC	Hertzberg, A.	NAG 1-327	5029
42	VIRGINIA POLY INST	Williams, J. P.	LARC	Meirovitch, L.	NAG 1-225	4954
43	AUBURN UNIV-AUBURN	Gerron, R.	KSC	Tatarchuk, B. J.	NAS10-10648	1012
43	CASE WESTERN RESERVE	Domitz, S.	LERC	Angus, J. C.	NAG 3-191	3947
43	CASE WESTERN RESERVE	Owens, F. C.	HQ-LB	Liu, C. C.	NGT 36-027-800	4008
43	CLEVELAND STATE UNIV	Banks, B. A.	LERC	Hambourger, P. D.	NCC 3-19	4039
43	CLEVELAND STATE UNIV	Wagner, R. F.	LERC	Coulman, G.	NCC 3-23	4042
43	CLEVELAND STATE UNIV	Leibeck, H. F.	LERC	Ghorashi, B.	NCC 3-31	4045
43	CLEVELAND STATE UNIV	Dutta, S.	LERC	Yeh, H. C.	NSG 3155	4046
43	COPPIN STATE COLLEGE	Rodriguez, G. E.	GSFC	McDermott, P. P.	NSG 5051	2806
43	CORNELL UNIVERSITY	Wydeven, T.	ARC	Shuler, M. L.	NSG 2408	3709
43	GEORGIA INST OF TECH	Lundy, F. E., Jr.	KSC	Winnick, J.	NAS10-10560	2375
43	LA ST U&A&M COL-BRGE	Haggard, J. B.	LERC	Frenklach, M.	NAG 3-477	2774
43	LA ST U&A&M COL-BRGE	Haggard, J.	LERC	Frenklach, M.	NAS 3-23542	2780
43	MASS INST OF TECH	Wydwon, J.	ARC	Hall, G. A.	NAG 2-224	3072
43	NORTHWESTERN UNIV	Briehl, D.	LERC	Law, C. K.	NAG 3-361	2451
43	RENSSELAER POLY-NY	Friedman, R.	LERC	Moynihan, C. T.	NAG 3-213	3762
43	STANFORD UNIVERSITY	Poppa, H.	ARC	Boudart, M.	NCA 2-745105	1518
43	STANFORD UNIVERSITY	Poppa, H.	ARC	Boudart, M.	NCA 2-745311	1537
43	SYRACUSE UNIVERSITY	Gordon, P.	HQ-EN	Schwarz, J. A.	NAGW 466	3862
43	UNIV OF AKRON	Owens, F. C.	HQ-LB	Savinelli, R. F.	NGT 36-001-802	4124
43	UNIV OF AKRON	Owens, F. C.	HQ-LB	Savinelli, R. F.	NGT 36-001-803	4125
43	UNIV CALIF-BERKELEY	MacElroy, R. D.	ARC	Tinoco, I.	NCA 2-50204	1664
43	UNIV CALIF-BERKELEY	Altman, R. L.	ARC	Grens, E. A., II	NCC 2-163	1671
43	UNIV CALIF-BERKELEY	Altman, R. L.	ARC	Grens, E. A.	NCC 2-164	1672
43	UNIV CALIF-DAVIS	Cagliostro, D. E.	ARC	Needles, H. L.	NCC 2-264	1716
43	UNIV OF CENTRAL FLA	Lin, F.	KSC	Hosler, E. R.	NAS10-10588	2274
43	UNIV OF DELAWARE	Alterescu, S.	GSFC	Glass, W. P.	NAS 5-26273	2172
43	UNIV OF TOLEDO	Buckley, D. H.	LERC	Rengstorff, G. W.	NAG 3-276	4161

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43	UNIV OF VIRGINIA	Owens, F. C.	HQ-LB	Lilleleht, L. U.	NGT 47-005-801	4922
43	YALE UNIVERSITY	Kohl, F. J.	LERC	Rosner, D. E.	NAG 3-201	2153
44	HOWARD UNIVERSITY	Alcorn, G. E.	GSFC	Spencer, M. G.	NAG 5-246	2232
44	UNIV OF AKRON	Carter, C. H.	HQ-LB	Fertis, D. G.	NGT 36-001-800	4122
44	UNIV OF AKRON	Carter, C. H.	HQ-LB	Chang, T. Y.	NGT 36-001-801	4123
44	UNIV COLORADO-BOLDR	Brooks, W. F.	ARC	Sture, S.	NAG 2-58	2051
44	UNIV MARYLAND-COL PK	Rango, A.	GSFC	Ragan, R. M.	NAG 5-9	2864
44	UNIV MARYLAND-COL PK	Carter, C. H.	HQ-LB	McCuen, R. H.	NGT 21-002-800	2947
44	VIRGINIA POLY INST	Whitlock, C. H.	LARC	Kuo, C. Y.	NAG 1-123	4938
45	ALABAMA A&M UNIV	Bilbro, J. W.	MSFC	Murty, S. R.	NSG 8037	1007
45	ARIZONA STATE UNIV	Anderson, L. M.	LERC	Wang, E. Y.	NAG 3-383	1091
45	CARNEGIE-MELLON UNIV	Lupton, A. O.	LARC	Siewiorek, D. P.	NAG 1-190	4228
45	CARNEGIE-MELLON UNIV	Hayes, P. J.	LARC	Kryder, M. H.	NAG 1-395	4230
45	CARNEGIE-MELLON UNIV	Magee, C. J.	LARC	Casasent, D.	NAG 1-409	4231
45	CARNEGIE-MELLON UNIV	Baumbick, R. J.	LERC	Casasent, D.	NAG 3-5	4232
45	CASE WESTERN RESERVE	Haugland, E. H.	LERC	Pyee, M. M.	NAG 3-187	3946
45	CASE WESTERN RESERVE	Heighway, J. E.	LERC	Ferendeci, A. M.	NAG 3-225	3953
45	CASE WESTERN RESERVE	Lalli, V. R.	LERC	Schultz, W. L.	NAG 3-253	3959
45	CASE WESTERN RESERVE	Downey, A. N.	LERC	Collins, R. E.	NAG 3-288	3965
45	CASE WESTERN RESERVE	Smetana, J.	LERC	Collins, R. E.	NAG 3-291	3967
45	CASE WESTERN RESERVE	Decker, A. J.	LERC	Thompson, E. D.	NAG 3-432	3985
45	CASE WESTERN RESERVE	Downey, A. N.	LERC	Collin, R. E.	NCC 3-29	4005
45	CITY COLLEGE OF N Y	Schadelbauer, S.	JSC	Schilling, D. L.	NAS 9-16473	3618
45	CITY COLLEGE OF N Y	Connolly, D. J.	LERC	Schilling, D.	NAG 3-299	3615
45	CITY U N Y-GRAD SCHL	May, B. D.	LERC	Schilling, D. L.	NAG 3-277	3621
45	CLEVELAND STATE UNIV	Hatvani, B. R.	LERC	Klingshirn, E. A.	NAG 3-108	4017
45	CLEVELAND STATE UNIV	Whyte, W. A.	LERC	Groumpos, P. P.	NAG 3-156	4021
45	CLEVELAND STATE UNIV	Triner, J. E.	LERC	Maisel, J. E.	NAG 3-169	4022
45	CLEVELAND STATE UNIV	Flood, D. J.	LERC	Goradia, M. G.	NAG 3-241	4024
45	CLEVELAND STATE UNIV	Curtis, H. B.	LERC	Goradia, C.	NAG 3-249	4025
45	CLEVELAND STATE UNIV	Bercaw, R. W.	LERC	Piszcior, M. F.	NAG 3-338	4028
45	CLEVELAND STATE UNIV	Godlewski, M. P.	LERC	Poulos, E.	NAG 3-441	4034
45	CLEVELAND STATE UNIV	Fordyce, J. S.	LERC	Chang, G. C.	NCC 3-16	4037
45	CLEVELAND STATE UNIV	Connolly, D. J.	LERC	Groumpos, P. P.	NCC 3-20	4040
45	CORNELL UNIVERSITY	Magee, C. J.	LARC	Eastman, L. F.	NAG 1-208	3665
45	CORNELL UNIVERSITY	Magee, C. J.	LARC	Ballantyne, J. M.	NSG 1642	3705
45	CORNELL UNIVERSITY	Walker, G. H.	LARC	Ballantyne, J. M.	NSG 1651	3706
45	CORNELL UNIVERSITY	Gilbert, L. J.	LERC	Thomas, R. J.	NAG 3-104	3674
45	DUKE UNIVERSITY	Kolecki, J. C.	LERC	Wilson, T. G.	NSG 3157	3879
45	GEORGE WASHINGTON U	Meneghini, R.	GSFC	Lang, R. H.	NAG 5-83	2193
45	GEORGE WASHINGTON U	Ondrus, P. J.	GSFC	Lee, T. N.	NAS 5-27273	2197
45	GEORGE WASHINGTON U	Bailey, M. C.	LARC	Liebowitz, H.	NSG 1110	2213
45	GEORGIA INST OF TECH	Dod, L. R.	GSFC	Gagliano, J. A.	NAS 5-27385	2369
45	GEORGIA INST OF TECH	Walton, W. T.	GSFC	Forsythe, R. E.	NSG 5012	2387
45	GEORGIA INST OF TECH	Eggers, D. S.	JSC	Cooke, W. P.	NAS 9-16353	2374
45	GEORGIA INST OF TECH	Clark, L. G.	LARC	Blue, M. D.	NAS 1-14654	2358
45	GEORGIA INST OF TECH	O'neal, R. L.	LARC	Gaylord, T. K.	NAS 1-15370	2359
45	GEORGIA INST OF TECH	Krawczonek, W. M.	LERC	Gallagher, J. J.	NAG 3-282	2355
45	GEORGIA INST OF TECH	Gleason, E. H.	MSFC	Gagliano, J. A.	NAS 8-33800	2372
45	HOFSTRA UNIVERSITY	Beck, F. B.	LARC	Weissman, D. E.	NAG 1-311	3720
45	HOFSTRA UNIVERSITY	Johnson, J. W.	LARC	Weissman, W. E.	NGR 33-209-002	3722
45	HOWARD UNIVERSITY	Chrissotimos, N.	GSFC	Chowdhary, R.	NAS 5-26531	2238
45	HOWARD UNIVERSITY	Truskowski, W. F.	GSFC	DeLoatch, E. M.	NCC 5-25	2240
45	HOWARD UNIVERSITY	Downey, A. N.	LERC	Wang, Y. C.	NAG 3-228	2224
45	HOWARD UNIVERSITY	Owens, F. C.	HQ-LB	Harris, G. L.	NGT 09-011-801	2243
45	JOHNS HOPKINS UNIV	Fuhr, P. L.	GSFC	Davidson, F. M.	NAG 5-356	2815
45	JOHNS HOPKINS UNIV	Pitts, F. L.	LARC	Masson, G. M.	NSG 1442	2843
45	MASS INST OF TECH	Elliott, J. R.	LARC	Stein, G.	NAG 1-2	3045
45	MASS INST OF TECH	Magee, C. J.	LARC	Fonstad, C. G.	NAG 1-48	3046
45	MASS INST OF TECH	Hayes, P. J.	LARC	Epstein, D. J.	NAG 1-98	3049

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45	MASS INST OF TECH	Armstrong, E. S.	LARC	Stein, G.	NSG 1553	3186
45	MASS INST OF TECH	Connolly, D. J.	LERC	Burke, B. F.	NAG 3-215	3082
45	MASS INST OF TECH	Maslowski, E. A.	LERC	Lang, J. H.	NAG 3-257	3083
45	MICHIGAN STATE UNIV	Shu, P. K.	GSFC	Siegel, M.	NAS 5-26445	3264
45	MICHIGAN STATE UNIV	Gilbert, L. J.	LERC	Schlueter, R. A.	NAG 3-399	3260
45	MICHIGAN STATE UNIV	Chomos, G. J.	LERC	Freeman, J. C.	NCC 3-26	3267
45	MISSISSIPPI STATE U	Dehaye, R. F.	MSFC	Wade, T. E.	NAS 8-33448	3388
45	MISSISSIPPI STATE U	Edge, T. M.	MSFC	Fratter, J. B.	NAS 8-33450	3389
45	MISSISSIPPI STATE U	Sieler, B. K.	MSFC	Ingels, F. M.	NAS 8-33887	3391
45	MISSISSIPPI STATE U	Carter, C. H.	HQ-LB	Mitchell, J. R.	NGT 25-001-801	3399
45	MISSISSIPPI STATE U	Owens, F. C.	HQ-LB	Ingels, F. M.	NGT 25-006-800	3400
45	MISSISSIPPI STATE U	Blum, A.	GSFC	Gilcrease, A.	NAS 5-26662	3587
45	NEW MEX ST U-LAS CR	Clark, I. O.	LARC	Collis, W. J.	NAG 1-403	3883
45	NO CAR A&T STATE U	Magee, C. J.	LARC	Stefanakos, E. K.	NSG 1390	3890
45	NO CAR A&T STATE U	Benz, H. F.	LARC	Snyder, W. E.	NAG 1-20	3893
45	NO CAROLINA STATE U	Lupton, A. O.	LARC	Gault, J. W.	NAG 1-194	3895
45	NO CAROLINA STATE U	Batson, V. M.	LARC	Rajala, S. A.	NSG 1355	3914
45	NO CAROLINA STATE U	Bailey, M. C.	LARC	Kauffman, J. F.	NSG 1588	3917
45	NO CAROLINA STATE U	Joshi, S. M.	LARC	Lin, J. G.	NAG 1-386	3212
45	NORTHEASTERN UNIV	Wolfe, J. H.	ARC	Kraus, J. D.	NSG 2162	4095
45	OHIO STATE UNIV	Gilreath, M. C.	LARC	Burnside, W. D.	NAG 1-333	4061
45	OHIO STATE UNIV	Beck, F. B.	LARC	Rudduck, C.	NAS 1-17450	4084
45	OHIO STATE UNIV	Beck, F. B.	LARC	Burnside, W. D.	NSG 1498	4093
45	OHIO STATE UNIV	Gilreath, M. C.	LARC	Peters, L., Jr.	NSG 1613	4094
45	OHIO STATE UNIV	Miller, E. F.	LERC	Levis, C. A.	NAG 3-159	4071
45	OHIO STATE UNIV	Cho, Y. C.	LERC	Pathak, P. H.	NAG 3-476	4077
45	OHIO UNIVERSITY	Howell, W. E.	LARC	McFarland, R. H.	NGR 36-009-017	4110
45	OLD DOMINION UNIV	Bailey, M. C.	LARC	Moskowitz, S. M.	NAG 1-63	4822
45	OLD DOMINION UNIV	Holmes, H. K.	LARC	Wagh, M. D.	NAG 1-387	4850
45	OLD DOMINION UNIV	Hellbaum, R. F.	LARC	Goglia, G. L.	NSG 1177	4874
45	OLD DOMINION UNIV	Gilreath, M. C.	LARC	Mielke, R. R.	NSG 1655	4886
45	PENN STATE U-UNIV PK	Owens, F. C.	HQ-LB	Nisbet, J. S.	NGT 39-009-807	4338
45	PRAIRIE VIEW A&M U	Lakowske, S. D.	ARC	Knighton, T. G.	NCA 2-598202	4496
45	PRAIRIE VIEW A&M U	Lakowske, S. D.	ARC	Knighton, T. G.	NCA 2-598203	4497
45	PURDUE UNIVERSITY	Strong, J. P.	GSFC	Reeves, A. P.	NAG 5-3	2592
45	PURDUE UNIVERSITY	Yates, I. C.	MSFC	Paciesas, W. S.	NAS 8-34303	2604
45	QUEENSBOROUGH COMM C	Webster, L. D.	ARC	Brown, R. J.	NCC 2-108	3750
45	RENSSELAER POLY-NY	Armstrong, E. S.	LARC	Balas, M. J.	NAG 1-171	3751
45	RENSSELAER POLY-NY	Brinker, D. J.	LERC	Ghandi, S. K.	NAG 3-188	3758
45	RICE UNIVERSITY	Owens, F. C.	HQ-LB	Rabson, T. A.	NGT 44-006-803	4520
45	RICE UNIVERSITY	Owens, F. C.	HQ-LB	Burrus, C. S.	NGT 44-006-804	4521
45	SAN JOSE STATE UNIV	Deboo, G. J.	ARC	Strasilla, U.	NAG 2-85	1380
45	SAN JOSE STATE UNIV	Deboo, G. J.	ARC	Yuen, C.	NCC 2-143	1418
45	SO ILL UNIV-CARBONDL	Bankaitis, H. V.	LERC	Dodd, C. W.	NCC 3-7	2468
45	STANFORD UNIVERSITY	Buften, J. L.	GSFC	Byer, R. L.	NAG 5-220	1480
45	STANFORD UNIVERSITY	Browell, E. V.	LARC	Byer, R. L.	NAG 1-182	1440
45	STANFORD UNIVERSITY	Whyte, W. A.	LERC	Lusignan, B. B.	NAG 3-151	1471
45	SYRACUSE UNIVERSITY	Stermer, R. L., Jr.	LARC	Kowel, S. T.	NSG 1611	3863
45	TEXAS A&M UNIVERSITY	Wang, J. R.	GSFC	Blanchard, A. J.	NAS 5-26686	4558
45	TEXAS TECH UNIV	Pitts, F. L.	LARC	Trost, T. F.	NAG 1-28	4598
45	UNIV CALIF-BERKELEY	Wales, R. O.	GSFC	Mozer, F. S.	NAG 5-375	1620
45	UNIV CALIF-L ANGELES	Abbott, L. W.	DFRF	Smyth, R. K.	NSG 4027	1800
45	UNIV CALIF-L ANGELES	Fripp, A. L.	LARC	Allen, F. G.	NAG 1-267	1736
45	UNIV OF CENTRAL FLA	Byrne, F.	KSC	Petrasko, B.	NAS10-10280	2272
45	UNIV OF CINCINNATI	Stermer, R. L.	LARC	Moriarity, J. A.	NAG 1-204	4128
45	UNIV OF CINCINNATI	Sundberg, G. R.	LERC	Henderson, H. T.	NAG 3-297	4135
45	UNIV OF CINCINNATI	Flood, D. J.	LERC	Mantel, T. D.	NAG 3-455	4137
45	UNIV OF CINCINNATI	Sundberg, G. R.	LERC	Henderson, H. T.	NSG 3022	4143
45	UNIV OF CINCINNATI	Renz, D.	LERC	Schetz, J. A.	NSG 3024	4144
45	UNIV OF DELAWARE	Weinberg, I.	LERC	Barnett, A. M.	NAG 3-321	2166

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45	UNIV OF DELAWARE	Flood, D. J.	LERC	Barnett, A. M.	NAG 3-422	2167
45	UNIV HOUSTON-HOUSTON	Horner, G. C.	LARC	Denman, E. D.	NSG 1603	4625
45	UNIV OF IDAHO	Morakis, J. C.	GSFC	Maki, G. K.	NAS 5-26534	2434
45	UNIV ILLINOIS-URBANA	Abshire, J. B.	GSFC	Gardner, C. S.	NSG 5049	2547
45	UNIV ILLINOIS-URBANA	Lee, R. Q.	LERC	Lo, Y. T.	NAG 3-418	2524
45	UNIV ILLINOIS-URBANA	Acosta, R. J.	LERC	Lee, S. W.	NAG 3-419	2525
45	UNIV ILLINOIS-URBANA	Smetana, J.	LERC	Mittra, R.	NAG 3-420	2526
45	UNIV ILLINOIS-URBANA	Cho, Y. C.	LERC	Lee, S. W.	NAG 3-475	2528
45	UNIV ILLINOIS-URBANA	Dewitt, R. L.	LERC	Strehlow, R. A.	NAS 3-22666	2534
45	UNIV MARYLAND-COL PK	Owe, M.	GSFC	Nccuen, R. A.	NAG 5-223	2877
45	UNIV MARYLAND-COL PK	Benz, H. F.	LARC	Lin, H. C.	NSG 1468	2965
45	UNIV MD-EASTRN SHORE	Mundy, J. R.	GSFC	Rich, S.	NCA 5-99	2981
45	UNIV OF MASS-AMHERST	Johnson, J. M.	LARC	McIntosh, R. E.	NAG 1-54	3217
45	UNIV OF MASS-AMHERST	Bailey, M. C.	LARC	Pozar, D. M.	NAG 1-163	3219
45	UNIV OF MASS-AMHERST	Kendall, B. M.	LARC	Yngvesson, K. S.	NAG 1-279	3220
45	UNIV MICH-ANN ARBOR	Brace, L. H.	GSFC	Unavailable	NAS 5-27305	3322
45	UNIV MICH-ANN ARBOR	Migneault, G. E.	LARC	Meyer, J. F.	NSG 1306	3339
45	UNIV NEBRASKA-LINCLN	Riley, T. J.	LERC	Woollam, J. A.	NAG 3-95	3461
45	UNIV NEBRASKA-LINCLN	Sundberg, G. R.	LERC	Woollam, J. A.	NAG 3-237	3464
45	UNIV OF NEW MEXICO	Hayes, P. J.	LARC	Grannemann, W. W.	NAG 1-95	3596
45	UNIV NEW SOUTH WALES	Weizer, V. G.	LERC	Green, M. A.	NAGW 267	5185
45	UNIV OF NOTRE DAME	Lehtinen, B.	LERC	Sain, M. K.	NSG 3048	2628
45	UNIV OF PENNSYLVANIA	Alcorn, G. E.	GSFC	Zemel, J. N.	NAS 5-27285	4352
45	UNIV OF SANTA CLARA	Grant, T. L.	ARC	Healy, T. J.	NCC 2-128	1992
45	UNIV TEXAS-AUSTIN	Lapoint, D. A.	JSC	Griffin, C. R.	NAS 9-16955	4669
45	UNIV TEXAS-AUSTIN	Brasher, M. R.	LERC	Weldon, W. F.	NAG 3-303	4642
45	UNIV OF TOLEDO	Whyte, W. A.	LERC	Kwatra, S. C.	NAG 3-42	4158
45	UNIV OF TOLEDO	Stevens, G. H.	LERC	Kwatra, S. C.	NAG 3-157	4160
45	UNIV OF TOLEDO	Hansen, I. G.	LERC	Stuart, T. A.	NAG 3-413	4165
45	UNIV OF TOLEDO	Corrigan, R. D.	LERC	Keith, T. G.	NCC 3-5	4174
45	UNIV OF TOLEDO	Connolly, D. J.	LERC	Kwatra, S. C.	NCC 3-22	4175
45	UNIV OF TORONTO	Gruber, R. P.	LERC	Stuart, T. A.	NSG 3281	4177
45	UNIV OF UTAH	Staskus, J. V.	LERC	Balmain, K. G.	NSG 7647	5190
45	UNIV OF VIRGINIA	Heighway, J.	LERC	Grow, R. W.	NAG 3-327	4745
45	UNIV OF VIRGINIA	Jones, R. L.	GSFC	Mattauch, R. J.	NAS 5-26466	4918
45	UNIV OF VIRGINIA	Peebles, S. W.	LARC	Aylor, J. H.	NAG 1-43	4888
45	UNIV OF VIRGINIA	Stermer, R. L.	LARC	Batchman, T. E.	NAG 1-177	4891
45	UNIV OF VIRGINIA	Jobson, D. J.	LARC	Batchman, T. E.	NAG 1-262	4895
45	UNIV OF VIRGINIA	Miller, E. F.	LERC	Wilson, S. G.	NAG 3-141	4900
45	UNIV OF VIRGINIA	Connolly, D. J.	LERC	Wilson, S. G.	NAG 3-316	4903
45	UNIV OF WASHINGTON	Xenakis, G.	ARC	Alexandro, F. J.	NCA 2-850301	5073
45	UNIV WISC-MADISON	Kittel, P.	ARC	Van Sciver, S. W.	NAG 2-242	5108
45	UNIV WISC-MADISON	Renz, D. D.	LERC	Boom, R. W.	NAG 3-170	5109
45	UNIV WISC-MADISON	Renz, D. D.	LERC	Boom, R. W.	NAG 3-359	5112
45	VIRGINIA POLY INST	Hirschmann, E.	GSFC	Bostian, C. W.	NAS 5-22577	4997
45	VIRGINIA POLY INST	Pitts, F. L.	LARC	Tront, J. G.	NAG 1-132	4941
45	VIRGINIA POLY INST	Cantrell, J. H.	LARC	Claus, R. O.	NAG 1-369	4973
45	VIRGINIA POLY INST	Maslowski, E. A.	LERC	Demerdash, N. A.	DEN 3-65	4931
45	VIRGINIA POLY INST	Maslowski, E. A.	LERC	Lee, F. C.	NAG 3-99	4979
45	VIRGINIA POLY INST	Kolecki, J. C.	LERC	Lee, F. C.	NAG 3-220	4983
45	VIRGINIA POLY INST	Sundberg, G. R.	LERC	Chen, D. D.	NAG 3-240	4984
45	VIRGINIA POLY INST	Hansen, I. G.	LERC	Lee, F. C.	NAG 3-405	4987
46	ARIZONA STATE UNIV	Fleming, D. P.	LERC	Nelson, H. D.	NAG 3-6	1085
46	ARIZONA STATE UNIV	Warer, C. J.	LERC	Mongia, H. C.	NAG 3-167	1088
46	CALIF INST OF TECH	Gross, L. A.	MSFC	Acosta, A. J.	NAS 8-33108	1287
46	CAL STATE U-LG BEACH	Johnson, D. A.	ARC	Modarress, D.	NCA 2-382001	1340
46	CAL STATE U-LG BEACH	Townsend, D. P.	LERC	Akin, L.	NAG 3-20	1338
46	CAL STATE U-L ANGLES	McFadden, J. J.	LERC	Gold, P. I.	NAG 3-73	1341
46	CARNEGIE-MELLON UNIV	Shih, T.	LERC	Ramos, J. I.	NAG 3-21	4233
46	CARNEGIE-MELLON UNIV	Hendricks, R. C.	LERC	Hughes, W. F.	NAG 3-166	4234

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46	CARNEGIE-MELLON UNIV	Kielb, R. E.	LERC	Griffin, J. H.	NAG 3-367	4236
46	CARNEGIE-MELLON UNIV	Tacina, R. R.	LERC	Sommer, H. T.	NAG 3-401	4237
46	CARNEGIE-MELLON UNIV	Chubb, D. L.	LERC	Lawless, J. L.	NAG 3-437	4239
46	CARNEGIE-MELLON UNIV	Neely, G. M.	LERC	Chigier, N.	NCC 3-32	4242
46	CARNEGIE-MELLON UNIV	Carter, C. H.	HQ-LB	Swedlow, J. L.	NGT 39-087-801	4244
46	CASE WESTERN RESERVE	Newman, J. C., Jr.	LARC	Mendelson, A.	NAG 1-304	3928
46	CASE WESTERN RESERVE	Liebert, C. H.	LERC	Dybbs, A.	NAG 3-97	3939
46	CASE WESTERN RESERVE	Gaugler, R. E.	LERC	Reshotko, E.	NAG 3-230	3954
46	CASE WESTERN RESERVE	Anderson, D. N.	LERC	T'ien, T. S.	NAG 3-290	3966
46	CASE WESTERN RESERVE	Hendricks, R. C.	LERC	Mullen, R. L.	NAG 3-369	3975
46	CASE WESTERN RESERVE	Kascak, A. F.	LERC	Adams, M. L.	NAG 3-391	3979
46	CASE WESTERN RESERVE	Shannon, J. L., Jr.	LERC	Mendelson, A.	NAG 3-396	3980
46	CASE WESTERN RESERVE	Norgren, C. T.	LERC	Dybbs, A.	NAG 3-467	3989
46	CASE WESTERN RESERVE	Hamrock, B. J.	LERC	Prahl, J. M.	NCC 3-30	4006
46	CASE WESTERN RESERVE	Shannon, J. L., Jr.	LERC	Mendelson, A.	NSG 3251	4014
46	CLARKSON COL OF TECH	Johnson, W. S.	LARC	Sancaktak, E.	NAG 1-284	3625
46	CLEMSON UNIV-CLEMSON	Whitcomb, J. D.	LARC	Goree, J. G.	NAG 1-316	4403
46	CLEMSON UNIV-CLEMSON	Poe, C. C., Jr.	LARC	Goree, J. G.	NSG 1297	4410
46	CLEVELAND STATE UNIV	Staiger, P. J.	LERC	Gorla, R. S.	NAG 3-155	4020
46	CLEVELAND STATE UNIV	Coy, J. J.	LERC	Frater, J. J.	NAG 3-186	4023
46	CLEVELAND STATE UNIV	Coy, J. J.	LERC	Flanagan, P. M.	NAG 3-315	4027
46	CLEVELAND STATE UNIV	McAleese, J. D.	LERC	Bellini, P. X.	NAG 3-375	4032
46	CLEVELAND STATE UNIV	Kascak, A. F.	LERC	Tomko, J. J.	NAG 3-386	4033
46	CLEVELAND STATE UNIV	Wang, C. R.	LERC	Heiles, C. E.	NCC 3-3	4035
46	CLEVELAND STATE UNIV	Linscott, B. S.	LERC	Kasuba, R.	NCC 3-6	4036
46	CLEVELAND STATE UNIV	Presler, A. F.	LERC	Alkasab, K. A.	NCC 3-17	4038
46	CLEVELAND STATE UNIV	Lorenzo, C. F.	LERC	Larson, V. H.	NSG 3257	4047
46	COLLEGE OF WM & MARY	Tanner, J. A.	LARC	Anderson, C. M.	NCC 1-40	4793
46	COLORADO STATE UNIV	Smith, G. T.	LERC	Smith, F. W.	NAG 3-40	2030
46	COLORADO STATE UNIV	Kerslake, W. R.	LERC	Wilbur, P. J.	NGR 06-002-112	2042
46	CORNELL UNIVERSITY	Hendricks, R. C.	LERC	Abel, J. F.	NAG 3-395	3677
46	DREXEL UNIVERSITY	Gatski, T. B.	LARC	Rosen, G. H.	NAG 1-110	4246
46	DREXEL UNIVERSITY	Humenik, F. M.	LERC	Cernansky, N. P.	NAG 3-382	4256
46	FLORIDA A&M UNIV	Alterescu, S.	GSFC	Fresh, F. A.	NAS 5-25165	2254
46	GEORGIA INST OF TECH	Lin, F. N.	KSC	Desai, P. V.	NAS10-10685	2376
46	GEORGIA INST OF TECH	Camarda, C. J.	LARC	Colwell, G. T.	NAG 1-392	2344
46	GEORGIA INST OF TECH	Gross, B.	LERC	Atluri, S. N.	NAG 3-38	2351
46	GEORGIA INST OF TECH	Jones, W. R.	LERC	Winer, W. O.	NAG 3-77	2353
46	GEORGIA INST OF TECH	Jones, W. R.	LERC	Winer, W. O.	NCC 3-14	2381
46	HOWARD UNIVERSITY	Cygnarowicz, T. A.	GSFC	Watkins, C. B.	NAG 5-25	2227
46	HOWARD UNIVERSITY	Housner, J. M.	LARC	Broome, T. H.	NAG 1-383	2221
46	ILL INST OF TECH	Whitcomb, J. D.	LARC	Daniel, I. M.	NAG 1-347	2437
46	IOWA STATE UNIV	Tanner, J. A.	LARC	Baumgarten, J. R.	NSG 1605	2652
46	IOWA STATE UNIV	Carter, C. H.	HQ-LB	Okiishi, T. H.	NGT 16-002-800	2649
46	ISRAEL INST OF TECH	Hendricks, R. C.	LERC	Etsion, I.	NAGW 327	5199
46	LEHIGH UNIVERSITY	Crews, J. H., Jr.	LARC	Erdogan, F.	NGR 39-007-011	4278
46	LEHIGH UNIVERSITY	Lubomski, J. F.	LERC	Johnson, S. H.	NAG 3-135	4273
46	MASS INST OF TECH	Chamis, C. C.	LERC	Pian, T. H.	NAG 3-33	3077
46	MASS INST OF TECH	Rohde, J. E.	LERC	Epstein, A. H.	NAG 3-335	3089
46	MASS INST OF TECH	Wood, J. C.	LERC	Heywood, J. B.	NAG 3-394	3093
46	MASS INST OF TECH	Vontiesenhausen, G. F.	MSFC	Miller, R. H.	NAS 8-34381	3150
46	MASS INST OF TECH	Gross, L. A.	MSFC	Sanchez, M. M.	NAS 8-35018	3153
46	MICHIGAN STATE UNIV	Holdeman, J. D.	LERC	Foss, J. F.	NAG 3-245	3258
46	MICHIGAN TECH UNIV	Schock, H. J.	LERC	Vilman, C.	NAG 3-326	3273
46	MICHIGAN TECH UNIV	Coy, J. J.	LERC	Passerello, C. E.	NAG 3-344	3274
46	MICHIGAN TECH UNIV	Lee, C.	LERC	Vilman, C.	NAG 3-456	3275
46	NO CAR A&T STATE U	Nowak, R. J.	LARC	Goswami, D. Y.	NAG 1-408	3888
46	NORTHWESTERN UNIV	Baker, C. E.	LERC	Law, C. K.	NAG 3-53	2448
46	NORTHWESTERN UNIV	Zaretsky, E. V.	LERC	Cheng, H. S.	NAG 3-345	2450
46	NORTHWESTERN UNIV	Wedeven, L. D.	LERC	Cheng, H. S.	NCC 3-13	2462



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46	NORTHWESTERN UNIV	Coy, J. J.	LERC	Cheng, H. S.	NSG 3143	2464
46	OHIO STATE UNIV	Brown, G. V.	LERC	Leissa, A. W.	NAG 3-36	4069
46	OKLAHOMA STATE UNIV	Holderman, J. D.	LERC	Lilley, D. G.	NAG 3-74	4186
46	OLD DOMINION UNIV	Garrett, L. B.	LARC	Thornton, E. A.	NAG 1-257	4837
46	OLD DOMINION UNIV	Walz, J. F.	LARC	Mei, C.	NAG 1-301	4841
46	OLD DOMINION UNIV	Tompkins, S. S.	LARC	Prabhakaran, R.	NCC 1-73	4866
46	PENN STATE U-UNIV PK	Prior, E. J.	LARC	Ibrahim, S. R.	NSG 1649	4884
46	PENN STATE U-UNIV PK	Clark, J. S.	LERC	Lestz, S. S.	NAG 3-91	4291
46	PENN STATE U-UNIV PK	Tacina, R. R.	LERC	Faeth, G. M.	NAG 3-190	4293
46	PENN STATE U-UNIV PK	Loomis, W. R.	LERC	Klaus, E. E.	NCC 3-9	4329
46	PENN STATE U-UNIV PK	Wilmer, G., Jr.	MSFC	Billet, M. L.	NAS 8-34535	4322
46	PRINCETON UNIVERSITY	McAleese, J. D.	LERC	Dowell, E. H.	NAG 3-221	3520
46	PURDUE UNIVERSITY	Johnson, W. S.	LARC	Hillberry, B. M.	NAG 1-231	2572
46	PURDUE UNIVERSITY	Clark, J. S.	LERC	Lefebvre, A. H.	NAG 3-266	2585
46	PURDUE UNIVERSITY	Straight, D. M.	LERC	Murthy, S. N.	NAG 3-281	2586
46	PURDUE UNIVERSITY	Lyons, V. J.	LERC	Laurendeau, N. M.	NAG 3-351	2587
46	PURDUE UNIVERSITY	Haggard, J. B.	LERC	Shifstad, J. G.	NSG 3258	2619
46	RENSSELAER POLY-NY	Kiraly, L. J.	LERC	Loewy, R. G.	NAG 3-37	3756
46	RENSSELAER POLY-NY	Jones, W. R., Jr.	LERC	Lauer, J. L.	NAG 3-222	3763
46	RENSSELAER POLY-NY	Graham, R. W.	LERC	Duffy, R. E.	NAG 3-292	3765
46	ROSE-HULMAN INST TEC	Brown, G. V.	LERC	North, C. M.	NAG 3-390	2623
46	SAN JOSE STATE UNIV	Nachtsheim, P.	ARC	Desautel, R.	NCA 2-675301	1392
46	SOUTHERN METHODIST U	Brooks, T. F.	LARC	Simpson, R. L.	NAG 1-317	4527
46	STANFORD UNIVERSITY	Lomax, H.	ARC	Hughes, T. J.	NCA 2-745104	1517
46	STANFORD UNIVERSITY	Johnson, D. A.	ARC	Eaton, J. K.	NCC 2-238	1576
46	STANFORD UNIVERSITY	Barker, L. K.	LARC	Cannon, R. H., Jr.	NAG 1-322	1445
46	STANFORD UNIVERSITY	Gaugler, R. E.	LERC	Johnston, J. P.	NAG 3-3	1469
46	STANFORD UNIVERSITY	Graham, R. W.	LERC	Eaton, J. K.	NAG 3-427	1477
46	STATE UNIV NY-BUFFAL	Owens, F. C.	HQ-LB	Inman, D. J.	NGT 33-183-801	3817
46	STATE U NY-STONY BRK	Owens, F. C.	HQ-LB	Berlad, A. L.	NGT 33-015-801	3845
46	STEVENS INST OF TECH	Kielb, R. E.	LERC	Sisto, F.	NAG 3-47	3576
46	TENNESSEE STATE UNIV	Allen, H.	LERC	Malkani, M. J.	NAG 3-458	4426
46	TEXAS A&M UNIVERSITY	Rankin, G.	JSC	Peterson, G. P.	NAS 9-16606	4580
46	TEXAS A&M UNIVERSITY	Clark, J. S.	LERC	Lalk, T. R.	NAG 3-142	4547
46	TEXAS A&M UNIVERSITY	Hendricks, R. C.	LERC	Childs, D. W.	NAG 3-181	4548
46	TEXAS A&M UNIVERSITY	Boyle, R. J.	LERC	Han, J. C.	NAG 3-311	4551
46	TEXAS A&M UNIVERSITY	Garcia, F. F.	MSFC	McDermott, M.	NAS 8-33716	4560
46	TEXAS A&M UNIVERSITY	Fox, T. W.	MSFC	Childs, D. W.	NAS 8-34505	4563
46	TEXAS A&M UNIVERSITY	Garcia, F. F.	MSFC	Morrison, G. L.	NAS 8-34536	4565
46	TUSKEGEE INSTITUTE	Allen, H., Jr.	LERC	Harris, V. G.	NAG 3-459	1016
46	UNIV OF AKRON	Chamis, C. C.	LERC	Padovan, J.	NAG 3-54	4112
46	UNIV OF AKRON	Coy, J. J.	LERC	Savage, M.	NAG 3-55	4113
46	UNIV OF AKRON	Hendricks, R. C.	LERC	Padovan, J.	NAG 3-265	4114
46	UNIV OF AKRON	Aydelott, J. C.	LERC	Hochstein, J. I.	NAG 3-318	4117
46	UNIV CALIF-BERKELEY	MacElroy, R. D.	ARC	Auslander, D. M.	NCC 2-67	1668
46	UNIV CALIF-BERKELEY	Schock, H. J.	LERC	Oppenheim, A. K.	NAG 3-137	1612
46	UNIV CALIF-BERKELEY	Owens, F. C.	HQ-LB	Auslander, D. M.	NGT 05-003-801	1690
46	UNIV CALIF-IRVINE	Tacina, R. R.	LERC	Elghobashi, S.	NAG 3-176	1723
46	UNIV CALIF-L ANGELES	Vorreiter, J. W.	ARC	Frederking, T. H.	NCC 2-64	1781
46	UNIV OF CENTRAL FLA	Koning, R.	KSC	Khattar, M. K.	NAS10-10686	2275
46	UNIV OF CINCINNATI	Coy, J. J.	LERC	Flanagan, P. M.	NAG 3-193	4133
46	UNIV OF CINCINNATI	Coy, J. J.	LERC	Huston, R. L.	NSG 3188	4145
46	UNIV OF CINCINNATI	Stubbs, R. M.	LERC	Tabakoff, W.	NSG 3218	4146
46	UNIV OF CONNECTICUT	Marek, C. J.	LERC	Bennett, J. C.	NAG 3-350	2143
46	UNIV OF CONNECTIGUT	Goldman, L. J.	LERC	Langston, L. S.	NSG 3238	2144
46	UNIV OF DAYTON	Kieffling, L.	MSFC	Drake, M. L.	NAS 8-34682	4156
46	UNIV OF DELAWARE	Deaton, J. W.	LARC	Pipes, R. B.	NSG 1304	2177
46	UNIV OF FLORIDA	Schock, H. J.	LERC	Shih, T. I.	NAG 3-363	2284
46	UNIV OF FLORIDA	Carter, C. H.	HQ-LB	Tesar, D.	NGT 10-005-802	2302
46	UNIV OF FLORIDA	Owens, F. C.	HQ-LB	Tesar, D.	NGT 10-005-804	2304

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46	UNIV HOUSTON-HOUSTON	Heyman, J. S.	LARC	Salama, K.	NAG 1-388	4604
46	UNIV ILLINOIS-CHICGO	Coy, J. J.	LERC	Litvin, F. L.	NAG 3-48	2512
46	UNIV ILLINOIS-CHICGO	Coy, J. J.	LERC	Litvin, F. W.	NAG 3-136	2513
46	UNIV ILLINOIS-URBANA	Kittel, P.	ARC	Chato, J. C.	NAG 2-144	2518
46	UNIV ILLINOIS-URBANA	Kittel, P.	ARC	Chato, J. C.	NAG 2-219	2520
46	UNIV ILLINOIS-URBANA	Fusaro, R. L.	LERC	Cusano, C.	NAG 3-153	2522
46	UNIV OF KANSAS	Hirschbein, M. S.	LERC	Dodds, R. H.	NAG 3-32	2705
46	UNIV OF KANSAS	Ault, L. A.	HQ-LG	Barr, B. G.	NASW 3438	2723
46	UNIV OF KENTUCKY	Cochran, T. H.	LERC	Altenkirch, R. A.	NSG 3114	2764
46	UNIV MICH-ANN ARBOR	Claus, R.	LERC	Radhakrishnan, K.	NAG 3-294	3283
46	UNIV MICH-ANN ARBOR	Wedeven, L. D.	LERC	Ludema, K. C.	NCC 3-11	3333
46	U MINN-MNPLS-ST PAUL	Gaugler, R. E.	LERC	Simon, T. W.	NAG 3-286	3360
46	UNIV OF SANTA CLARA	Clark, J. S.	LERC	Peffley, R. K.	NAG 3-143	1974
46	UNIV TENNESSEE-KNOXV	Mularz, E. J.	LERC	Peters, C. E.	NAG 3-370	4438
46	UNIV TEXAS-AUSTIN	McCoy, J. E.	JSC	Nacozy, P. E.	NAS 9-16744	4667
46	UNIV TEXAS-AUSTIN	Kieffling, L.	MSFC	Craig, R. R.	NAS 8-35338	4663
46	UNIV OF TOLEDO	Claus, R. W.	LERC	Keith, T. G.	NAG 3-355	4163
46	UNIV OF TOLEDO	Gaugler, R. E.	LERC	Jeng, D. R.	NAG 3-452	4168
46	UNIV OF VIRGINIA	Horner, G. C.	LARC	Haviland, J. K.	NAG 1-349	4896
46	UNIV OF VIRGINIA	Kascak, A. F.	LERC	Allaire, P. E.	NAG 3-180	4901
46	UNIV OF VIRGINIA	Cunningham, R. E.	LERC	Humphris, R. R.	NAG 3-263	4902
46	UNIV OF WASHINGTON	Pittman, C. M.	LARC	Emery, A. F.	NAG 1-41	5026
46	UNIV OF WASHINGTON	Kascar, A. F.	LERC	Wolak, J.	NAG 3-7	5032
46	UNIV OF WASHINGTON	Marek, C. J.	LERC	Pratt, D. T.	NAG 3-227	5034
46	UNIV WISC-MADISON	Simon, F. F.	LERC	Borman, G. L.	NAG 3-274	5111
46	VIRGINIA POLY INST	Chestnutt, D.	LARC	O'brien, W. F.	NAG 1-156	4944
46	VIRGINIA POLY INST	Johnson, W. S.	LARC	Brinson, H. F.	NAG 1-227	4955
46	WASHINGTON UNIVERSTY	Burns, R.	MSFC	Haefner, L. E.	NAS 8-34341	3448
46	WEST VIRGINIA UNIV	Carter, C. H.	HQ-LB	Padhye, A.	NGT 49-001-800	5096
47	ARIZONA STATE UNIV	Newman, J. C., Jr.	LARC	Shaw, M. C.	NAG 1-339	1082
47	ARIZONA STATE UNIV	Reeves, F. A.	MSFC	Wagner, J. B.	NAS 8-32937	1103
47	CARNEGIE-MELLON UNIV	Rush, H. F.	LARC	Bhat, G. K.	NAS 1-17216	4240
47	CASE WESTERN RESERVE	Gray, H. R.	LERC	Ebert, L. J.	NAG 3-30	3933
47	CASE WESTERN RESERVE	Thompson, R. L.	LERC	Manson, S. S.	NAG 3-39	3934
47	CASE WESTERN RESERVE	Halford, G. R.	LERC	Manson, S. S.	NAG 3-46	3935
47	CASE WESTERN RESERVE	Smialek, J. L.	LERC	Ebert, L. J.	NAG 3-58	3936
47	CASE WESTERN RESERVE	Miner, R. V.	LERC	Welsch, G. E.	NAG 3-218	3949
47	CASE WESTERN RESERVE	Gross, B.	LERC	Chudnovsky, A.	NAG 3-223	3951
47	CASE WESTERN RESERVE	Miller, R. A.	LERC	Mitchell, T. E.	NAG 3-224	3952
47	CASE WESTERN RESERVE	Dreshfield, R. L.	LERC	Wallace, J. F.	NAG 3-268	3961
47	CASE WESTERN RESERVE	Mirtich, M. J.	LERC	Hehemann, R. F.	NAG 3-279	3963
47	CASE WESTERN RESERVE	Kiraly, L. J.	LERC	Halloran, J. W.	NAG 3-287	3964
47	CASE WESTERN RESERVE	Smialek, J. L.	LERC	Halloran, J. W.	NAG 3-324	3970
47	CASE WESTERN RESERVE	Halford, G. R.	LERC	Manson, S. S.	NAG 3-337	3972
47	CASE WESTERN RESERVE	Titran, R. H.	LERC	Vedula, K. M.	NAG 3-387	3977
47	CASE WESTERN RESERVE	Gray, H. R.	LERC	Wallace, J. W.	NAG 3-417	3983
47	CASE WESTERN RESERVE	Levine, S. R.	LERC	Wallace, J. F.	NAG 3-464	3988
47	CASE WESTERN RESERVE	Freedman, M. R.	LERC	Halloran, J. W.	NAG 3-468	3990
47	CASE WESTERN RESERVE	Aukerman, C. A.	LERC	Dybbs, A.	NSG 3040	4011
47	CASE WESTERN RESERVE	Gray, H. R.	LERC	Ebert, L. J.	NSG 3246	4013
47	CLARKSON COL OF TECH	Fripp, A. L.	LARC	Carlson, F. M.	NAG 1-397	3626
47	CLARKSON COL OF TECH	Reeves, F. A.	MSFC	Wilcox, W. R.	NAS 8-34887	3632
47	CLEMSON UNIV-CLEMSON	Nunes, A. C.	MSFC	Thompson, R. G.	NAS 8-33524	4407
47	CLEVELAND STATE UNIV	Vary, A.	LERC	Hemann, J. H.	NAG 3-106	4016
47	CLEVELAND STATE UNIV	Klima, S. J.	LERC	Hemann, J. H.	NCC 3-24	4043
47	CLEVELAND STATE UNIV	Miller, R. A.	LERC	Chang, G. C.	NCC 3-27	4044
47	COLORADO STATE UNIV	Nelson, H. G.	ARC	Spain, I. L.	NAG 2-157	2027
47	COLORADO STATE UNIV	Nelson, H. G.	ARC	Etters, R. D.	NAG 2-171	2028
47	COLORADO STATE UNIV	Kerslake, W. R.	LERC	Wilbur, P. J.	NAG 3-25	2029
47	COLUMBIA UNIVERSITY	Scheuermann, C. M.	LERC	Tien, J. K.	NAG 3-57	3636

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47	COLUMBIA UNIVERSITY	Petrasek, D. W.	LERC	Tien, J. K.	NAG 3-410	3637
47	CORNELL UNIVERSITY	Nelson, H. G.	ARC	Ruoff, A. L.	NAG 2-158	3668
47	CORNELL UNIVERSITY	Nelson, H. G.	ARC	Ashcroft, N. W.	NAG 2-159	3669
47	DARTMOUTH COLLEGE	Whittenberger, J. D.	LERC	Schulson, E. M.	NAG 3-13	3482
47	DARTMOUTH COLLEGE	Kascek, A.	LERC	Kennedy, F. E., Jr.	NSG 3253	3489
47	DREXEL UNIVERSITY	Poe, C. C., Jr.	LARC	Awerbuch, J.	NSG 1606	4267
47	DREXEL UNIVERSITY	Glasgow, T. K.	LERC	Apelian, D.	NAG 3-14	4254
47	GEORGE WASHINGTON U	Prior, E. J.	LARC	Liebowitz, H.	NAG 1-158	2187
47	GEORGE WASHINGTON U	Swann, R. T.	LARC	Liebowitz, H.	NCC 1-36	2206
47	GEORGIA INST OF TECH	Schron, S. R.	LERC	Ribarsky, M. W.	NAG 3-255	2354
47	GEORGIA INST OF TECH	Johnston, M. H.	MSFC	Brown, J. L.	NAS 8-33438	2371
47	ILL INST OF TECH	Gray, H. R.	LERC	Bloom, T.	NAG 3-409	2440
47	JOHNS HOPKINS UNIV	Heyman, J. S.	LARC	Green, R. E., Jr.	NAG 1-211	2807
47	JOHNS HOPKINS UNIV	Lisagor, W. B.	LARC	Shechtman, D.	NAG 1-399	2808
47	LEHIGH UNIVERSITY	Dietrich, J. W.	JSC	Goldstein, J. I.	NAG 9-45	4274
47	MASS INST OF TECH	Barrow, B. J.	LERC	Pelloux, R. M.	NAG 3-280	3084
47	MASS INST OF TECH	Dutta, S.	LERC	Haggerty, J. S.	NAG 3-312	3086
47	MASS INST OF TECH	Vary, A.	LERC	Williams, J. H., Jr.	NAG 3-328	3087
47	MASS INST OF TECH	Gray, H. R.	LERC	Szekely, J.	NAG 3-365	3090
47	MASS INST OF TECH	Weinberg, I.	LERC	Gatos, H. C.	NSG 3017	3193
47	MASS INST OF TECH	Vary, A.	LERC	Williams, J. H., Jr.	NSG 3210	3196
47	MASS INST OF TECH	Testardi, L. R.	HQ-EM	Flemings, M. C.	NSG 7645	3211
47	MASS INST OF TECH	Gordon, P. G.	HQ-EN	Tuller, H. L.	NAGW 403	3126
47	MASS INST OF TECH	Holt, S. S.	HQ-MF	Masubuchi, K.	NASW 3740	3159
47	MICHIGAN STATE UNIV	McGaw, M. A.	LERC	Martin, J. F.	NAG 3-51	3255
47	MICHIGAN STATE UNIV	McGaw, M. A.	LERC	Martin, J. F.	NAG 3-453	3261
47	MICHIGAN TECH UNIV	Gedwill, M. A.	LERC	Heckel, R. W.	NAG 3-244	3272
47	NO CAR A&T STATE U	Dicus, D. L.	LARC	Avva, V. S.	NAG 1-404	3884
47	NO CAR A&T STATE U	Buckley, J. D.	LARC	Botros, B. M.	NSG 1516	3891
47	OREGON HLTH SCNCS U	Fogle, V.	MSFC	Brooks, D. E.	NAS 8-33575	4210
47	OHIO STATE UNIV	Vary, A.	LERC	Fu, L. S.	NAG 3-340	4073
47	OHIO STATE UNIV	Bozek, J.	LERC	Albright, C. E.	NAG 3-448	4076
47	OHIO STATE UNIV	Bill, R. C.	LERC	Black, J. T.	NSG 3164	4099
47	OHIO STATE UNIV	Vary, A.	LERC	Fu, L. S.	NSG 3269	4102
47	OLD DOMINION UNIV	Walker, G. H.	LARC	Heinbockel, J. H.	NAG 1-148	4828
47	OLD DOMINION UNIV	Ilig, W.	LARC	Goglia, G. L.	NAG 1-196	4831
47	PENN STATE U-UNIV PK	Barranger, J. P.	LERC	Bradt, R. C.	NAG 3-68	4290
47	PENN STATE U-UNIV PK	Powell, J. A.	LERC	Spear, K. E.	NAG 3-177	4292
47	PENN STATE U-UNIV PK	Leese, G.	LERC	Zamrik, S. Y.	NAG 3-264	4294
47	PRINCETON UNIVERSITY	Chai, A.	LERC	Saville, D. A.	NAG 3-447	3527
47	PURDUE UNIVERSITY	Newman, J. C., Jr.	LARC	Grandt, A. F., Jr.	NAG 1-321	2575
47	PURDUE UNIVERSITY	Scheuermann, C. M.	LERC	Radavich, J. F.	NAG 3-59	2580
47	RENSSELAER POLY-NY	Johnston, N. J.	LARC	Sternstein, S. S.	NAG 1-253	3752
47	RENSSELAER POLY-NY	Miner, R. V.	LERC	Duquette, D. J.	NAG 3-22	3755
47	RENSSELAER POLY-NY	Powell, J. A.	LERC	Diefen, R. J.	NAG 3-203	3760
47	RENSSELAER POLY-NY	Gray, H. R.	LERC	Glicksman, M. E.	NAG 3-333	3766
47	RENSSELAER POLY-NY	Schaefer, D. A.	MSFC	Glicksman, M. E.	NAS 8-32425	3768
47	RENSSELAER POLY-NY	Schaefer, D. A.	MSFC	Wiedemier, H.	NAS 8-32936	3769
47	RENSSELAER POLY-NY	Greenfield, M. A.	HQ-RT	Loewy, R. G.	NGL 33-018-003	3771
47	RICE UNIVERSITY	Fallon, R. A.	MSFC	Margrave, J. L.	NAS 8-33199	4508
47	SAN JOSE STATE UNIV	Riccitiello, S. R.	ARC	Anderson, R. N.	NCC 2-3	1397
47	SAN JOSE STATE UNIV	Mansfield, J.	ARC	Holmstrom, F.	NCC 2-80	1410
47	SAN JOSE STATE UNIV	Nelson, H. G.	ARC	Clements, L. L.	NCC 2-137	1416
47	SAN JOSE STATE UNIV	Nelson, H. G.	ARC	Pizzo, P. P.	NCC 2-155	1420
47	SAN JOSE STATE UNIV	Riccitiello, S. R.	ARC	Anderson, R. N.	NCC 2-195	1426
47	STANFORD UNIVERSITY	Nelson, H. G.	ARC	Heinemann, K.	NCC 2-103	1558
47	STANFORD UNIVERSITY	Goebel, J. H.	ARC	Feigelson, R.	NCC 2-222	1574
47	STANFORD UNIVERSITY	Whittenberger, J. D.	LERC	Nix, W. D.	NAG 3-248	1472
47	STANFORD UNIVERSITY	Fogle, V.	MSFC	Ferguson, R. S.	NAS 8-34872	1507
47	STANFORD UNIVERSITY	Ambrus, J. H.	HQ-RT	Felgelson, R.	NAGW 268	1489

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47	STATE U NY-STONY BRK	Miller, R. A.	LERC	Herman, H.	NAG 3-164	3819
47	SYRACUSE UNIVERSITY	Shannon, J. L., Jr.	LERC	Liu, H. W.	NAG 3-348	3861
47	TENNESSEE STATE UNIV	Young, S. G.	LERC	Chaudhuri, D. K.	NAG 3-125	4425
47	TEXAS A&M UNIVERSITY	Thompson, R. L.	LERC	Haisler, W. E.	NAG 3-31	4545
47	TEXAS A&M UNIVERSITY	Serafina, T. T.	LERC	Lee, S. W.	NAG 3-129	4546
47	TEXAS A&M UNIVERSITY	Whittenberger, J. D.	LERC	Wolfenden, A.	NAG 3-314	4552
47	UNIV ALA-BIRMINGHAM	Rowe, R. R.	MSFC	Thompson, R. G.	NAS 8-34962	1024
47	UNIV ALA-HUNTSVILLE	Bass, B. G.	MSFC	Hendricks, J. B.	NAS 8-33542	1035
47	UNIV ALA-HUNTSVILLE	McClure, J. C.	MSFC	Davis, J.	NAS 8-33810	1039
47	UNIV ALA-HUNTSVILLE	McClure, J. C.	MSFC	Davis, J. H.	NAS 8-33811	1040
47	UNIV ALA-UNIVERSITY	Reeves, F. A.	MSFC	Stefanescu, D. M.	NAS 8-34724	1068
47	UNIV OF ARIZONA	Ensign, C. R.	LERC	Eiseman, P. R.	NAG 3-41	1127
47	UNIV CALIF-L ANGELES	Barranger, J. P.	LERC	McKenzie, J. D.	NAG 3-295	1746
47	UNIV CALIF-L ANGELES	Holanda, R.	LERC	Bunshah, R. F.	NAG 3-451	1748
47	UNIV CALIF-S BARBARA	Nelson, H. G.	ARC	Shanabarger, M. R.	NCC 2-63	1934
47	UNIV OF CINCINNATI	Hirschberg, M. H.	LERC	Antolovich, S. D.	NSG 3263	4147
47	UNIV OF CONNECTICUT	Stephens, J. R.	LERC	Nowotny, H.	NAG 3-271	2141
47	UNIV OF DAYTON	Lark, R. L.	LERC	Emery, S. A.	DEN 3-286	4148
47	UNIV OF DAYTON	Orange, T. W.	LERC	Gallagher, J. P.	NAG 3-246	4151
47	UNIV OF DELAWARE	Dexter, H. B.	ARC	Pipes, R. B.	NAG 1-378	2165
47	UNIV OF FLORIDA	Outlaw, R. A.	LARC	Holloway, P. H.	NAG 1-154	2279
47	UNIV OF FLORIDA	Dutta, S.	LERC	Hench, L. L.	NSG 3254	2306
47	UNIV HOUSTON-HOUSTON	Viegas, J. R.	ARC	Hussain, A. K.	NSG 2337	4626
47	UNIV HOUSTON-HOUSTON	Fogle, V.	MSFC	Chu, C. W.	NAS 8-35161	4613
47	UNIV ILLINOIS-URBANA	Johnston, N. J.	LARC	Wang, S. S.	NAG 1-286	2516
47	UNIV ILLINOIS-URBANA	Dreshfield, R. L.	LERC	Fraser, H. L.	NAG 3-325	2523
47	UNIV ILLINOIS-URBANA	Leese, G. E.	LERC	Socie, D. F.	NAG 3-465	2527
47	UNIV MICH-ANN ARBOR	Clark, L. G.	LARC	Felbeck, D. K.	NAS 1-17008	3301
47	U MINN-MNPLS-ST PAUL	Card, M. F.	LARC	Plunkett, R.	NAG 1-99	3353
47	U MINN-MNPLS-ST PAUL	Elber, W.	LARC	Hsiao, C. C.	NAG 1-278	3355
47	UNIV MO-ROLLA	Munafu, P. M.	MSFC	Leighly, H. P.	NAS 8-35325	3424
47	UNIV OF NOTRE DAME	Powell, J. A.	LERC	Zeller, M. V.	NAG 3-428	2625
47	UNIV OF PITTSBURGH	Kohl, F. J.	LERC	Birks, N.	NAG 3-44	4361
47	U PUERTO RICO-MAYAGZ	Goldberg, S. R.	HQ-LG	Sasscer, D. S.	NAGW 198	5184
47	UNIV SO CAROLINA-COL	Owens, F. C.	HQ-LB	Peters, W. H.	NGT 41-002-800	4415
47	UNIV TEXAS-AUSTIN	Owens, F. C.	HQ-LB	Kyriakides, S.	NGT 44-012-801	4676
47	UNIV OF TORONTO	Baker, D. J.	LARC	Schweikhard, W. G.	NSG 7409	5189
47	UNIV OF UTAH	Fripp, A. L.	LARC	Rosenberger, F. E.	NSG 1534	4758
47	UNIV OF VIRGINIA	Fripp, A. L.	ARC	Jesser, W. A.	NAG 1-350	4897
47	UNIV OF VIRGINIA	Outlaw, R. A.	LARC	Jesser, W. A.	NAG 1-371	4898
47	UNIV OF VIRGINIA	Fripp, A. L.	LARC	Jesser, W. A.	NSG 1652	4923
47	UNIV OF VIRGINIA	Behrendt, D. R.	LERC	Wawner, F. E.	NAG 3-402	4904
47	UNIV OF WASHINGTON	Goldstein, H. E.	ARC	Mueller, J. I.	NAG 2-120	5031
47	UNIV OF WASHINGTON	Bersch, C. F.	HQ-RT	Mueller, J. I.	NAGW 199	5055
47	UNIV WISC-MADISON	Gray, H. R.	LERC	Perepezo, J. H.	NAG 3-436	5113
47	UNIV OF WYOMING	Johnston, N. J.	LARC	Zimmerman, R. S.	NAG 1-277	5168
47	UNIV OF WYOMING	Obrien, T. K.	LARC	Adams, D. F.	NAS 1-16557	5177
47	UNIV OF WYOMING	Dicarlo, J. A.	LERC	Adams, D. F.	NSG 3217	5183
47	VANDERBILT UNIVERSTY	Nichols, R. L.	MSFC	Kinser, D. L.	NAS 8-32695	4467
47	VANDERBILT UNIVERSTY	Gardner, L. B.	MSFC	Bayuzick, R. J.	NAS 8-34676	4469
47	VANDERBILT UNIVERSTY	Ethridge, E. C.	MSFC	Kinser, D. L.	NAS 8-34963	4470
47	VANDERBILT UNIVERSTY	Owens, F. C.	HQ-LB	Bayuzick, R. J.	NGT 43-002-800	4472
47	VIRGINIA POLY INST	Nelson, H. G.	ARC	Brinson, H. F.	NCC 2-71	5004
47	VIRGINIA POLY INST	Johnston, N. J.	LARC	Wilkes, G. L.	NAG 1-78	4933
47	VIRGINIA POLY INST	Sykes, G. F.	LARC	McGrath, J. E.	NAG 1-106	4936
47	VIRGINIA POLY INST	Poe, C. C., Jr.	LARC	Morris, D. H.	NAG 1-264	4961
47	VIRGINIA POLY INST	Blankenship, C. P.	LARC	Torgersen, P. E.	NAG 1-343	4971
47	VIRGINIA POLY INST	Tenney, D. R.	LARC	Brown, J. J.	NCC 1-62	5001
47	VIRGINIA POLY INST	Baker, D. J.	LARC	Hyer, M. W.	NSG 1621	5020
47	VIRGINIA POLY INST	Stephens, J. R.	LERC	Louthan, M. R., Jr.	NAG 3-78	4978

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47	VIRGINIA POLY INST	Vary, A.	LERC	Henneke, E. G.	NAG 3-172	4981
47	VIRGINIA POLY INST	Vary, A.	LERC	Henneke, E. G., II	NAG 3-323	4985
47	VIRGINIA POLY INST	Orange, T. W.	LERC	Dowling, N. E.	NAG 3-438	4988
47	YALE UNIVERSITY	Kohl, F. J.	LERC	Rosner, D. E.	NSG 3107	2161
49	BOWIE STATE COLLEGE	Mundy, J. R.	GSFC	Ponds, J. W.	NCA 5-96	2801
49	CALIF INST OF TECH	Owens, F. C.	HQ-LB	Ashkenas, H.	NGT 05-003-790	1307
49	CAL POLY ST U-S LUIS	Saltzman, E. J.	DFRF	Sandlin, D. R.	NAG 4-7	1319
49	CARNEGIE-MELLON UNIV	Sacksteder, K. R.	LERC	Sirignano, W. A.	NAG 3-404	4238
49	CASE WESTERN RESERVE	Meyer, G.	ARC	Martin, C.	NAG 2-82	3930
49	CASE WESTERN RESERVE	Doolin, B. F.	ARC	Martin, C. F.	NSG 2384	4010
49	CASE WESTERN RESERVE	Meyers, J. F., Jr.	LARC	Edwards, R. V.	NAG 1-328	3929
49	CASE WESTERN RESERVE	Seasholtz, R. G.	LERC	Edwards, R. V.	NAG 3-2	3931
49	CASE WESTERN RESERVE	Seasholtz, R. G.	LERC	Edwards, R. V.	NAG 3-247	3957
49	CASE WESTERN RESERVE	Sarsfield, L. P.	LERC	Ostrach, S.	NAG 3-300	3968
49	CASE WESTERN RESERVE	Sarsfield, L. P.	LERC	Ostrach, S.	NAG 3-384	3976
49	CASE WESTERN RESERVE	Bailey, C. E.	LERC	Boulding, E.	NAG 3-406	3981
49	CASE WESTERN RESERVE	Lehtinen, B.	LERC	Buchner, M.	NAG 3-454	3987
49	CASE WESTERN RESERVE	Labus, T. L.	LERC	Ostrach, S.	NAG 3-472	3991
49	CASE WESTERN RESERVE	Sarsfield, L. P.	LERC	Ostrach, S.	NAG 3-480	3993
49	CASE WESTERN RESERVE	Shannon, J. L., Jr.	LERC	Wright, D. K., Jr.	NAS 3-23683	3999
49	CASE WESTERN RESERVE	Finnegan, P. M.	LERC	Dybbs, A.	NCC 3-8	4002
49	CASE WESTERN RESERVE	Owens, F. C.	HQ-LB	Prahl, J. M.	NGT 36-027-011	4007
49	CATHOLIC UNIVERSITY	Studer, P. A.	GSFC	Deshpande, M. D.	NAS 5-27343	2180
49	CLEVELAND STATE UNIV	Stenger, F. J.	LERC	Donoghue, J. F.	NAG 3-84	4015
49	CLEVELAND STATE UNIV	Vary, A.	LERC	Maisel, J. E.	NAG 3-362	4030
49	CLEVELAND STATE UNIV	Loomis, W. R.	LERC	Gorla, R. S.	NCC 3-21	4041
49	COLLEGE OF WM & MARY	Finelli, G. B.	LARC	Schaefer, M. K.	NSG 1625	4801
49	COLUMBIA UNIVERSITY	Stephens, D. G.	LARC	Galanter, E.	NSG 1550	3660
49	CORNELL UNIVERSITY	Bents, D. J.	LERC	Lewis, A.	NAG 3-293	3675
49	CORNELL UNIVERSITY	Owens, F. C.	HQ-LB	Philipson, W. R.	NGT 33-010-800	3704
49	CUYAHOGA COMMUNITY C	Bailey, C. E.	LERC	Wieser, N.	NAG 3-313	4048
49	DE ANZA COLLEGE	Lum, H.	ARC	Frederick, V.	NCC 2-31	1348
49	DREXEL UNIVERSITY	Meyer, G.	ARC	Calise, A. J.	NAG 2-8	4251
49	DREXEL UNIVERSITY	Baucom, R. M.	LARC	Rogers, V. A.	NAG 1-247	4249
49	GEORGE WASHINGTON U	Morakis, J. C.	GSFC	Helgert, H. J.	NSG 5109	2217
49	GEORGE WASHINGTON U	Wolfer, B.	JSC	Logsdon, J.	NAS 9-16461	2199
49	GEORGE WASHINGTON U	Owens, F. C.	HQ-LB	Silverman, B. G.	NGT 09-010-800	2212
49	GEORGIA INST OF TECH	Webbon, B. W.	ARC	Olson, L. H.	NAG 2-135	2347
49	GEORGIA INST OF TECH	Wydeven, T. J.	ARC	Carden, J.	NAG 2-170	2348
49	GEORGIA INST OF TECH	Vykukal, H. C.	ARC	Olson, L. H.	NCC 2-119	2379
49	GEORGIA INST OF TECH	Vykukal, H. C.	ARC	Olson, L. H.	NSG 2356	2384
49	HAMPTON INSTITUTE	Carter, C. H.	HQ-LB	Spencer, J. H.	NGT 47-020-800	4815
49	HARVARD UNIVERSITY	Meyer, G.	ARC	Byrnes, C. I.	NSG 2265	3037
49	HOWARD UNIVERSITY	Mundy, J. R.	GSFC	Cox, E. L.	NCA 5-29	2239
49	HOWARD UNIVERSITY	Housner, J. M.	LARC	Broome, T. H., Jr.	NAG 1-290	2220
49	HOWARD UNIVERSITY	Hammer, H. A.	LARC	Bainum, P. M.	NSG 1414	2244
49	ILL INST OF TECH	Miller, W. H.	GSFC	Costello, D. J., Jr.	NAG 5-234	2442
49	IOWA STATE UNIV	Anderson, M. S.	LARC	Lewin, W.	NSG 1372	2651
49	JOHN CARROLL UNIV	Baumbick, R. J.	LERC	Carome, E.	NAG 3-366	4049
49	JOHNS HOPKINS UNIV	Degnan, J. J.	GSFC	Davidson, F.	NCC 5-24	2836
49	LINCOLN UNIV-PA	Mundy, J. R.	GSFC	Williams, W. W.	NCA 5-98	4284
49	MASS INST OF TECH	Stewart, J. D.	ARC	Young, L. R.	NAG 2-12	3059
49	MASS INST OF TECH	Cicolani, L. S.	ARC	Holt, M.	NGL 22-009-124	3169
49	MASS INST OF TECH	Vento, D. M.	LERC	Wachman, H. Y.	NAG 3-173	3079
49	MORGAN STATE UNIV	Friedman, D. S.	GSFC	Taylor, J. H.	NAS 5-23558	2849
49	NEW MEX ST U-LAS CR	Pincus, B. R.	GSFC	Lawrence, H.	NAS 5-26332	3586
49	NEW YORK UNIVERSITY	Chai, A. T.	LERC	Ting, L.	NSG 3059	3741
49	OHIO STATE UNIV	Meyer, G.	ARC	Wyman, B.	NAG 2-34	4063
49	OHIO STATE UNIV	Bowles, K. J.	LERC	Smith, E. E.	NSG 3235	4100
49	OLD DOMINION UNIV	Hamer, H. A.	LARC	Goglia, G. L.	NAG 1-102	4824

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## APPENDIX - CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
49	OLD DOMINION UNIV	Bush, H. G.	LARC	Razzaq, Z.	NAG 1-336	4844
49	OLD DOMINION UNIV	Wieting, A. R.	LARC	Thornton, E. A.	NSG 1321	4876
49	OLD DOMINION UNIV	Owens, F. C.	HQ-LB	Goglia, G. L.	NGT 47-003-029	4869
49	OREGON STATE UNIV	Spera, D. A.	LERC	Thresher, R. W.	NAG 3-87	4212
49	PRINCETON UNIVERSITY	Wieting, A. R.	LARC	Bogdonoff, S. M.	NAS 1-17247	3542
49	PRINCETON UNIVERSITY	Labus, T. L.	LERC	Williams, F. A.	NAG 3-380	3525
49	PURDUE UNIVERSITY	Oseroff, H.	GSFC	Anuta, P. E.	NAS 5-26859	2602
49	ROCHESTER INST TECH	Oseroff, H.	GSFC	Schott, J. R.	NAS 5-27323	3775
49	SAN JOSE STATE UNIV	Mansfield, J. A.	ARC	Mayer, L. A.	NAG 2-99	1381
49	SAN JOSE STATE UNIV	Holmstrom, F.	ARC	Ponds, J. W.	NCC 2-114	1412
49	SAN JOSE STATE UNIV	Mansfield, J. A.	ARC	Mayer, L. A.	NCC 2-165	1422
49	SAN JOSE STATE UNIV	Mansfield, J. A.	ARC	Holmstrom, F.	NCC 2-256	1435
49	STANFORD UNIVERSITY	Erzberger, H.	ARC	Bryson, A. E.	NGL 05-020-007	1579
49	STANFORD UNIVERSITY	Wolfe, J. H.	ARC	Peterson, A. M.	NSG 2121	1601
49	STANFORD UNIVERSITY	Owens, F. C.	HQ-LB	Bershader, D.	NGT 05-020-412	1591
49	STANFORD UNIVERSITY	Owens, F. C.	HQ-LB	Bershader, D.	NGT 05-020-808	1600
49	STATE U NY-BINGHAMTN	Carter, C. H.	HQ-LB	Goel, N. S.	NGT 33-188-803	3810
49	STATE U NY-STONY BRK	Labus, T. L.	LERC	Berlad, A. L.	NAG 3-381	3820
49	TENNESSEE STATE UNIV	Pohly, J. G.	HQ-LC	Malkani, M. J.	NGT 43-014-750	4428
49	TEXAS A&M UNIVERSITY	Stroughal, G.	JSC	Porteiro, J. R.	NAS 9-16443	4576
49	TEXAS A&M UNIVERSITY	Smelser, J. W.	MSFC	Unavailable	NAS 8-34912	4567
49	TEXAS A&M UNIVERSITY	Ledford, H.	MSFC	Foster, J. W.	NAS 8-35083	4569
49	TEXAS A&M UNIVERSITY	Owens, F. C.	HQ-LB	Horn, W. J.	NGT 44-001-800	4594
49	TEXAS TECH UNIV	Meyer, G.	ARC	Hunt, L. R.	NAG 2-189	4599
49	TEXAS TECH UNIV	Meyer, G.	ARC	Su, R.	NAG 2-203	4600
49	TUSKEGEE INSTITUTE	Pohly, J. G.	HQ-LC	Harris, G.	NGT 01-005-750	1021
49	UNIV OF AKRON	Hannum, N. P.	LERC	Braun, M. J.	NAG 3-304	4115
49	UNIV ALA-HUNTSVILLE	Owens, F. C.	HQ-LB	Karr, G. R.	NGT 01-008-021	1063
49	UNIV ALA-UNIVERSITY	Carter, C. H.	HQ-LB	Barfield, B. F.	NGT 01-002-099	1069
49	UNIV OF ARIZONA	Melugin, R. K.	ARC	Hillman, D. W.	NAG 2-220	1126
49	UNIV OF ARIZONA	Wagnon, F. W.	MSFC	Krider, P.	NAS 8-33718	1188
49	UNIV CALIF-BERKELEY	Stuart, L. M.	GSFC	Colwell, R. N.	NAS 5-27377	1653
49	UNIV CALIF-BERKELEY	Vento, D. M.	LERC	Pagni, P. J.	NAG 3-443	1614
49	UNIV CALIF-BERKELEY	Weinreb, M.	HQ-EZ	Bowyer, S.	NASW 3636	1658
49	UNIV CALIF-DAVIS	Oseroff, H.	GSFC	Ford, G. E.	NAS 5-27577	1705
49	UNIV CALIF-L ANGELES	Sobieski, J.	LARC	Schmit, L. A., Jr.	NSG 1490	1794
49	UNIV CALIF-SAN DIEGO	Davis, M. A.	GSFC	Whipple, E. C.	NAS 5-27248	1855
49	UNIV CALIF-SAN DIEGO	Sacksteder, K.	LERC	Berlad, A. L.	NAG 3-473	1818
49	UNIV CALIF-SAN DIEGO	Gordon, P. G.	HQ-EN	Arnold, J. R.	NASW 3643	1865
49	UNIV OF CENTRAL FLA	Fedor, O. H.	KSC	Anderson, L. A.	NAS10-10746	2276
49	UNIV OF CINCINNATI	Mikulas, M. M., Jr.	LARC	Nayfeh, A. H.	NSG 1185	4142
49	UNIV OF CONNECTICUT	Kaufman, A.	LERC	Jordan, E. H.	NAG 3-160	2140
49	UNIV OF FLORIDA	Fleish, A. F.	GSFC	Green, A. E.	NAS 5-22908	2291
49	UNIV OF FLORIDA	Bivins, R. G.	HQ-LG	Thornton, J. R.	NASW 3624	2295
49	UNIV OF GEORGIA	Kugelman, D. D.	GSFC	Welch, R. A.	NAS 5-27383	2396
49	UNIV HOUSTON-HOUSTON	Horner, G. C.	LARC	Denman, E. D.	NAG 1-370	4603
49	UNIV HOUSTON-HOUSTON	Carter, C. H.	HQ-LB	Huang, C. J.	NGT 44-005-115	4620
49	UNIV OF KANSAS	Mayes, W. H.	LARC	Smith, H. W.	NAG 1-147	2695
49	UNIV MARYLAND-COL PK	Degnan, J. J.	GSFC	Hochuli, U. E.	NAG 5-263	2883
49	UNIV MARYLAND-COL PK	Dombrowski, M.	GSFC	Wilkerson, T. D.	NAG 5-323	2888
49	UNIV MARYLAND-COL PK	Truskowski, W. F.	GSFC	Roussopoulos, N.	NAS 5-26810	2916
49	UNIV MARYLAND-COL PK	Truskowski, W. F.	GSFC	Roussopoulos, N.	NAS 5-27724	2924
49	UNIV MARYLAND-COL PK	Chapman, J. W.	GSFC	Newton, J. W.	NCA 5-28	2930
49	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Emad, F. P.	NGT 21-002-254	2946
49	UNIV OF MIAMI	Wales, R. O.	GSFC	Brown, D. O.	NAS 5-27642	2316
49	UNIV MICH-ANN ARBOR	Mah, R. W.	ARC	Anderson, D. J.	NAS 2-11225	3306
49	UNIV OF NEW MEXICO	Pohly, J.	HQ-LC	Robertson, M.	NGT 32-004-770	3605
49	UNIV OF NOTRE DAME	Meyer, G.	ARC	Sain, M. K.	NAG 2-35	2624
49	UNIV OF PERU	Christie, C. J.	GSFC	Unavailable	NASW 7	5200
49	UNIV OF RHODE ISLAND	Meintel, A. J.	LARC	Dally, J. W.	NAG 1-173	4398

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49	UNIV STHN COLORADO	Webster, L. D.	ARC	Dunn, W. R.	NCC 2-91	2135
49	UNIV TENNESSEE-KNOXV	Wieting, A. R.	LARC	Baker, A. J.	NAG 1-319	4430
49	UNIV TENNESSEE-KNOXV	Carter, C. H.	HQ-LB	Antar, B. N.	NGT 43-001-802	4456
49	UNIV TEXAS-AUSTIN	Kiefling, L. A.	MSFC	Craig, R. C.	NAS 8-33980	4662
49	UNIV OF TOLEDO	Sullivan, T. L.	LERC	Fu, K. C.	NAG 3-373	4164
49	UNIV OF TOLEDO	Nakanishi, S.	LERC	Dewitt, K. J.	NAG 3-415	4166
49	UNIV OF VIRGINIA	Lamb, G. M.	GSFC	Mattauch, R. J.	NAS 5-24218	4916
49	UNIV OF VIRGINIA	Storaasli, O. O.	LARC	Ortega, J. M.	NAG 1-46	4889
49	UNIV OF WASHINGTON	Greenshields, D.	HQ-MR	Mueller, J. I.	NAGW 281	5057
49	UNIV WISC-MADISON	Owens, F. C.	HQ-LB	Kiefer, R. W.	NGT 50-002-800	5160
49	VIRGINIA POLY INST	Davis, J. G., Jr.	LARC	Herakovich, C. T.	NAG 1-128	4940
49	VIRGINIA POLY INST	Hayduk, R. J.	LARC	Kamat, M. P.	NAG 1-139	4942
49	VIRGINIA POLY INST	Somers, D. M.	LARC	Eiss, N. S.	NAG 1-300	4968
49	VIRGINIA POLY INST	Sobieski, J.	LARC	Drew, D. R.	NAS 1-17256	4996
49	VIRGINIA POLY INST	Tenney, D. R.	LARC	Ingram, J.	NCC 1-15	5000
49	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	Regan, J. T.	NGT 47-004-804	5009
51	AMHERST COLLEGE	Mandel, A. D.	ARC	Goldsby, R. A.	NAG 2-180	2984
51	BAYLOR COL OF MED	Ferandin, J.	ARC	Dunn, C. D.	NAS 2-10801	4477
51	BAYLOR COL OF MED	Leach, C. S.	JSC	Dunn, C. D.	NAS 9-16898	4487
51	BAYLOR COL OF MED	Halstead, T. W.	HQ-EB	Dunn, C. D.	NAGW 308	4476
51	BOSTON UNIVERSITY	Devincenzi, D. L.	HQ-EB	Campbell, S. E.	NAGW 141	2994
51	BROOKLYN COLLEGE	Miquel, J.	ARC	Cottrell, S. F.	NCA 2-75201	3609
51	CALIF INST OF TECH	MacElroy, R. D.	ARC	Stephanoplulos A, G. N.	NCC 2-122	1293
51	CAL STATE U-L ANGLES	Hochstein, L. I.	ARC	Yavarkovsky, J. H.	NSG 2199	1342
51	CASE WESTERN RESERVE	Halstead, T. W.	HQ-EB	Keefe, J. R.	NAGW 83	3996
51	COLUMBIA UNIVERSITY	Holton, E. M.	ARC	Doty, S. B.	NCA 2-172101	3650
51	COLUMBIA UNIVERSITY	Halstead, T. W.	HQ-EB	Doty, S. B.	NAGW 238	3642
51	COLUMBIA UNIVERSITY	Halstead, T. W.	HQ-EB	Wolgemuth, D. J.	NAGW 346	3643
51	CORNELL UNIVERSITY	MacElroy, R. D.	ARC	Langhans, R. W.	NCA 2-175301	3693
51	CORNELL UNIVERSITY	Halstead, T. W.	HQ-EB	Leopold, A. C.	NAGW 3	3680
51	CORNELL UNIVERSITY	Devincenzi, D. L.	HQ-EB	Gibson, J.	NSG 7529	3714
51	EMORY UNIVERSITY	Holton, E. M.	ARC	Popovic, V. P.	NAG 2-87	2334
51	EMORY UNIVERSITY	Gomersall, E. W.	ARC	Popovic, V. P.	NAS 2-10527	2335
51	EMORY UNIVERSITY	Holton, E. M.	ARC	Popovic, V. P.	NGL 11-001-009	2337
51	FLORIDA A&M UNIV	Winget, C. M.	ARC	Walker, C. A.	NAG 2-81	2253
51	FLORIDA STATE UNIV	Wydeven, T.	ARC	White, R. C.	NAG 2-149	2259
51	FLORIDA STATE UNIV	Devincenzi, D. L.	HQ-EB	Friedmann, E. I.	NSG 7337	2268
51	HAHNEMANN MED COL	Mehler, W. R.	ARC	Rubertone, J. A.	NCA 2-270201	4270
51	HAHNEMANN MED COL	Mehler, W. R.	ARC	Rubertone, J. A.	NCA 2-270301	4271
51	HARVARD UNIVERSITY	Ferandin, J.	ARC	Moore-ede, M. C.	NAS 2-10547	3020
51	HARVARD UNIVERSITY	Lauber, J. K.	ARC	Gander, P. H.	NCA 2-284101	3030
51	INDIANA U-BLOOMINGTN	Halstead, T. W.	HQ-EB	Malacinski, G. M.	NAGW 60	2560
51	JOHNS HOPKINS UNIV	Logan, J.	JSC	Fortney, S. M.	NAS 9-16703	2834
51	KENYON COLLEGE	Halstead, T. W.	HQ-EB	Edwards, K. L.	NAGW 368	4054
51	LEHIGH UNIVERSITY	Yost, V.	MSFC	Vanderhoff, J. W.	NAS 8-32951	4275
51	LOMA LINDA UNIV	Owens, F. C.	HQ-LB	Linkhart, T. A.	NGT 05-078-800	1357
51	LOYOLA UNIV-CHICAGO	Halstead, T. W.	HQ-EB	Hayes, A. B.	NAGW 131	2445
51	MARQUETTE UNIVERSITY	Ellis, S.	ARC	Fitts, R. H.	NAG 2-212	5098
51	MASS INST OF TECH	Daunton, N. G.	ARC	Young, L. R.	NAG 2-88	3061
51	MASS INST OF TECH	Daunton, N. G.	ARC	Bizzi, E.	NAG 2-126	3067
51	MASS INST OF TECH	Devincenzi, D. L.	HQ-EB	Biemann, K.	NGR 22-009-005	3174
51	MED COL OF WISC	Kennard, J.	ARC	Riley, D. A.	NAS 2-11305	5100
51	MICHIGAN STATE UNIV	Halstead, T. W.	HQ-EB	Bandurski, R. S.	NAGW 97	3263
51	MICHIGAN STATE UNIV	Holt, S. S.	HQ-MF	Bandurski, R. S.	NASW 3748	3266
51	NEW MEX INST MINING	Geib, D. S.	HQ-EB	Brierley, J. A.	NAGW 378	3579
51	NO CAR A&T STATE U	Berry, W. E.	ARC	Ahrens, S. T.	NCA 2-545201	3889
51	NORTHWESTERN UNIV	Geib, D. S.	HQ-EB	Lerman, A.	NAGW 339	2457
51	OHIO STATE UNIV	Mehler, W. R.	ARC	Lim, D. J.	NSG 2220	4098
51	OHIO STATE UNIV	Halstead, T. W.	HQ-EB	Vans, M. E.	NAGW 297	4080
51	OKLAHOMA STATE UNIV	Devincenzi, D. L.	HQ-EB	Clayton, R. N.	NAGW 26	4187

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51	PA ST U-HERSHEY MED	Keil, L.	ARC	Severs, W. B.	NCC 2-127	4285
51	PENN STATE U-UNIV PK	Grindeland, R.	ARC	Hymer, W.	NCA 2-589101	4326
51	PENN STATE U-UNIV PK	Morrison, D.	JSC	Todd, P. W.	NAS 9-15584	4324
51	PENN STATE U-UNIV PK	Halstead, T. W.	HQ-EB	Cosgrow, D. J.	NAGW 480	4310
51	PRINCETON UNIVERSITY	Fogle, W.	MSFC	Saville, D. A.	NAS 8-32614	3550
51	PRINCETON UNIVERSITY	Halstead, T. W.	HQ-EB	Jacobs, W. P.	NSG 7280	3562
51	PURDUE UNIVERSITY	Ferandin, J.	ARC	Mitchell, C. A.	NAS 2-10514	2600
51	PURDUE UNIVERSITY	Halstead, T. W.	HQ-EB	Mitchell, C. A.	NSG 7278	2622
51	ROCKEFELLER UNIV	Daunton, N. G.	ARC	Miller, A. D.	NAG 2-164	3776
51	ROCKEFELLER UNIV	MacElroy, R. D.	ARC	Loew, G. H.	NCA 2-630001	3778
51	ROCKEFELLER UNIV	Daunton, N. G.	ARC	Wilson, V. J.	NSG 2380	3780
51	ROCKEFELLER UNIV	Devincenzi, D. L.	HQ-EB	Mercer-Smith, J. A.	NAGW 321	3777
51	ROCKEFELLER UNIV	Halstead, T. W.	HQ-EB	Rayle, D.	NAGW 230	1362
51	SAN DIEGO STATE UNIV	Greenleaf, J. E.	ARC	Barnes, P. R.	NCA 2-660103	1371
51	SAN FRAN STATE UNIV	Daunton, N. G.	ARC	Ginsberg, R.	NCA 2-675002	1383
51	SAN JOSE STATE UNIV	Klein, H. P.	ARC	Weaver, E. C.	NCA 2-675202	1390
51	SAN JOSE STATE UNIV	Suri, K. P.	ARC	Fox, R. A.	NCC 2-72	1408
51	SAN JOSE STATE UNIV	Winget, C. M.	ARC	Holley, D. C.	NCC 2-141	1417
51	SAN JOSE STATE UNIV	Daunton, N. G.	ARC	Fox, R. A.	NCC 2-167	1423
51	SAN JOSE STATE UNIV	Deroshia, C. W.	ARC	Holley, D. C.	NCC 2-197	1427
51	SAN JOSE STATE UNIV	Oyama, J.	ARC	Holley, D. C.	NCC 2-207	1428
51	SAN JOSE STATE UNIV	Kraft, L. M.	ARC	Savage, W.	NCC 2-227	1432
51	SAN JOSE STATE UNIV	Devincenzi, D. L.	HQ-EB	Yopp, J. H.	NAGW 344	2466
51	SO ILL UNIV-CARBONDL	Klein, H. P.	ARC	Pittendrigh, C. S.	NAG 2-122	1456
51	STANFORD UNIVERSITY	Holton, E.	ARC	Feldman, D.	NCA 2-745007	1513
51	STANFORD UNIVERSITY	Williams, B. A.	ARC	Heller, H. C.	NCA 2-745206	1524
51	STANFORD UNIVERSITY	Holton, E. M.	ARC	Feldman, D.	NCA 2-745208	1526
51	STATE U NY-BINGHAMTN	Gomersall, E. W.	ARC	Sulzman, F. M.	NAG 2-232	3802
51	STATE U NY-BINGHAMTN	Souza, K. A.	ARC	Sulzman, F. M.	NAS 2-10621	3805
51	STATE U NY-BINGHAMTN	Nolte, R. W.	JSC	Sulzman, F. M.	NAS 9-15975	3806
51	STATE U NY-BINGHAMTN	Carter, C. H.	HQ-LB	Sulzman, F. M.	NGT 33-188-800	3807
51	STATE U NY-BINGHAMTN	Owens, F. C.	HQ-LB	Jensen, R. A.	NGT 33-188-801	3808
51	STATE U NY-BINGHAMTN	Ellis, S.	ARC	Almon, R. R.	NAG 2-211	3812
51	STATE UNIV NY-BUFFAL	Ferandin, J.	ARC	Krikorian, A. D.	NAS 2-10520	3833
51	STATE U NY-STONY BRK	Halstead, T. W.	HQ-EB	Krikorian, A. D.	NSG 7270	3848
51	STATE U NY-STONY BRK	Halstead, T. W.	HQ-EB	Finck, A.	NAGW 242	4349
51	TEMPLE UNIVERSITY	Owens, F. C.	HQ-LB	Heilman, J. L.	NGT 44-001-802	4596
51	TEXAS A&M UNIVERSITY	Carter, C. H.	HQ-LB	Hartman, H. B.	NGT 44-011-800	4601
51	TEXAS TECH UNIV	MacElroy, R. D.	ARC	Weaver, D.	NCA 2-785201	3215
51	TUFTS UNIVERSITY	MacElroy, R. D.	ARC	Johnson, E. J.	NCA 2-800001	2794
51	TULANE UNIVERSITY	MacElroy, R. D.	ARC	Johnson, E. J.	NCA 2-800301	2795
51	TULANE UNIVERSITY	Ellis, S.	ARC	Max, S. F.	NAG 2-100	2854
51	U MD BALTO PROF SCHL	Owens, F. C.	HQ-LB	Young, R. B.	NGT 01-002-803	1061
51	UNIV ALA-HUNTSVILLE	Halstead, T. W.	HQ-EB	Tischler, M.	NAGW 227	1162
51	UNIV OF ARIZONA	Halstead, T. W.	HQ-EB	Stuart, D. G.	NAGW 338	1168
51	UNIV OF ARIZONA	Halstead, T. W.	HQ-EB	Tischler, M. E.	NAGW 357	1170
51	UNIV OF ARIZONA	Owens, F. C.	HQ-LB	Convertino, V.	NGT 03-002-802	1216
51	UNIV OF ARIZONA	Ferandin, J. A.	ARC	Pace, N.	NAS 2-10499	1638
51	UNIV CALIF-BERKELEY	Ferandin, J. A.	ARC	Pace, N.	NAS 2-10504	1639
51	UNIV CALIF-BERKELEY	Souza, K.	ARC	Pace, N.	NAS 2-10658	1640
51	UNIV CALIF-BERKELEY	Souza, K. A.	ARC	Thornton, J. R.	NCA 2-50205	1665
51	UNIV CALIF-BERKELEY	Devincenzi, D. L.	HQ-EB	Buchanan, B. B.	NAGW 211	1629
51	UNIV CALIF-BERKELEY	Halstead, T. W.	HQ-EB	Feldman, L. J.	NAGW 239	1630
51	UNIV CALIF-BERKELEY	Devincenzi, D. L.	HQ-EB	Buchanan, B. B.	NAGW 427	1635
51	UNIV CALIF-BERKELEY	Halstead, T. W.	HQ-EB	Pace, N.	NSG 7262	1697
51	UNIV CALIF-BERKELEY	Halstead, T. W.	HQ-EB	Pace, N.	NSG 7336	1698
51	UNIV CALIF-DAVIS	Ellis, S.	ARC	Ashmore, C. R.	NCA 2-180302	1709
51	UNIV CALIF-DAVIS	Ellis, S.	ARC	Ashmore, C. R.	NCA 2-180303	1710
51	UNIV CALIF-DAVIS	Winget, C. M.	ARC	Chapman, L. F.	NCA 2-180905	1711
51	UNIV CALIF-DAVIS	Halstead, T. W.	HQ-EB	Horowitz, J. M.	NSG 2234	1719



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51	UNIV CALIF-DAVIS	Halstead, T. W.	HQ-EB	Abbott, U. K.	NSG 7493	1720
51	UNIV CALIF-DAVIS	Owens, F. C.	HQ-LB	Horowitz, J. M.	NGT 05-004-800	1717
51	UNIV CALIF-DAVIS	Owens, F. C.	HQ-LB	Bernauer, E.	NGT 05-004-801	1718
51	UNIV CALIF-IRVINE	Ellis, S.	ARC	Baldwin, K. M.	NAG 2-107	1722
51	UNIV CALIF-IRVINE	Ferandin, J. A.	ARC	Baldwin, K. M.	NAS 2-10522	1731
51	UNIV CALIF-IRVINE	Devincenzi, D. L.	HQ-EB	Lanyi, T. K.	NAGW 212	1728
51	UNIV CALIF-RIVERSIDE	Ferandin, J.	ARC	Fuller, C. A.	NAS 2-10536	1812
51	UNIV CALIF-RIVERSIDE	Halstead, T. W.	HQ-EB	Fuller, C. A.	NAGW 309	1811
51	UNIV CALIF-SAN DIEGO	Devincenzi, D. L.	HQ-EB	Nealson, K. H.	NAGW 73	1837
51	UNIV CALIF-SAN DIEGO	Devincenzi, D. L.	HQ-EB	Lewin, R. A.	NAGW 181	1839
51	UNIV CALIF-SAN DIEGO	Devincenzi, D. L.	HQ-EB	Fahey, R. C.	NAGW 342	1843
51	UNIV CALIF-SAN FRAN	Mehler, W. R.	ARC	Snyder, R. L.	NCA 2-665003	1896
51	UNIV CALIF-SAN FRAN	Keil, L. C.	ARC	Ramsay, D. J.	NCA 2-665006	1897
51	UNIV CALIF-SAN FRAN	Holton, E. M.	ARC	Cann, C. E.	NCA 2-665008	1899
51	UNIV CALIF-SAN FRAN	Ellis, S.	ARC	Rosen, S. D.	NCA 2-665102	1900
51	UNIV CALIF-SAN FRAN	Keil, L. C.	ARC	Reid, I. A.	NCA 2-665103	1901
51	UNIV CALIF-SAN FRAN	V-danellis, J.	ARC	Dallman, M. F.	NCA 2-665201	1902
51	UNIV CALIF-SAN FRAN	Callahan, P. X.	ARC	Cann, C.	NCA 2-665202	1903
51	UNIV CALIF-SAN FRAN	Keil, L. C.	ARC	Reid, I. A.	NCA 2-665203	1904
51	UNIV CALIF-SAN FRAN	Holton, E. M.	ARC	Arnaud, C. D.	NCA 2-665902	1906
51	UNIV CALIF-SAN FRAN	Ellis, S.	ARC	Rosen, S. D.	NCA 2-665903	1907
51	UNIV CALIF-SAN FRAN	Holton, E. M.	ARC	Arnaud, C. D.	NCC 2-181	1913
51	UNIV CALIF-SAN FRAN	Holton, E. M.	ARC	Halloran, B. F.	NCC 2-225	1915
51	UNIV CALIF-SAN FRAN	Halstead, T. W.	HQ-EB	Bikle, D. D.	NAGW 236	1889
51	UNIV CALIF-SAN FRAN	Halstead, T. W.	HQ-EB	Halloran, B.	NAGW 349	1891
51	UNIV CALIF-SAN FRAN	Devincenzi, D. L.	HQ-EB	Stoeckenius, W.	NSG 7151	1916
51	UNIV CALIF-S BARBARA	Billingham, J.	ARC	Valentine, J. W.	NAG 2-73	1918
51	UNIV OF CHICAGO	Daunton, N. G.	ARC	Goldberg, J. M.	NAG 2-148	2470
51	UNIV OF CHICAGO	Billingham, J.	ARC	Raup, D. M.	NAG 2-237	2471
51	UNIV OF CHICAGO	Soffen, G. A.	HQ-EB	Fernandez, H.	NSG 7303	2510
51	UNIV OF CONNECTICUT	Devincenzi, D. L.	HQ-EB	Leadbetter, E. R.	NSG 7450	2147
51	UNIV OF DELAWARE	Rambler, M. B.	HQ-EB	Klenas, V.	NAGW 374	2171
51	UNIV OF FLORIDA	Greenleaf, J. E.	ARC	Fregly, M. J.	NCA 2-240101	2297
51	UNIV OF FLORIDA	Greenleaf, J. E.	ARC	Fregly, M. J.	NCA 2-240301	2298
51	UNIV HOUSTON-HOUSTON	Schneider, H. J.	JSC	Zlatkis, A.	NAS 9-15882	4615
51	UNIV HOUSTON-HOUSTON	Devincenzi, D. L.	HQ-EB	Fox, G. E.	NSG 7440	4627
51	UNIV HOUSTON-HOUSTON	Halstead, T. W.	HQ-EB	Cowles, J. R.	NSG 9042	4629
51	UNIV HOUSTON-HOUSTON	Owens, F. C.	HQ-LB	Heilman, J. L.	NGT 44-005-801	4622
51	UNIV OF LOUISVILLE	Ferandin, J. A.	ARC	Musacchia, X. J.	NAS 2-10510	2766
51	UNIV OF LOUISVILLE	Mandel, A. D.	ARC	Rubertone, J. A.	NCA 2-400101	2768
51	UNIV OF LOUISVILLE	Mandel, A. D.	ARC	Sonnenfeld, G.	NCC 2-213	2769
51	UNIV OF LOUISVILLE	Holton, E. M.	ARC	Musacchia, X. J.	NSG 2325	2770
51	UNIV OF LOUISVILLE	Halstead, T. W.	HQ-EB	Musacchia, X. J.	NAGW 70	2765
51	UNIV MICH-ANN ARBOR	Ferandin, J. A.	ARC	Ross, M.	NAS 2-10535	3304
51	UNIV MICH-ANN ARBOR	Reschke, M. F.	JSC	Anderson, D. J.	NAS 9-15375	3328
51	UNIV MICH-ANN ARBOR	Halstead, T. W.	HQ-EB	Nace, G. W.	NAGW 29	3293
51	UNIV MICH-ANN ARBOR	Halstead, T. W.	HQ-EB	Kaufman, P. B.	NAGW 34	3295
51	UNIV MICH-ANN ARBOR	Devincenzi, D. L.	HQ-EB	Rich, A.	NSG 7452	3344
51	UNIV MICH-ANN ARBOR	Halstead, T. W.	HQ-EB	Ross, M. D.	NSG 9047	3345
51	UNIV NEW HAMP-DURHAM	MacElroy, R. D.	ARC	Moore, B.	NCC 2-27	3503
51	UNIV NEW HAMP-DURHAM	MacElroy, R. D.	ARC	Moore, B., III	NCC 2-209	3504
51	UNIV NEW HAMP-DURHAM	MacElroy, R. D.	ARC	Averner, M. M.	NCC 2-210	3505
51	UNIV NEW HAMP-DURHAM	Rambler, M.	HQ-EB	Moore, B.	NAGW 453	3499
51	U OKLA-HLTH SCI CTR	Heinrich, M. R.	ARC	Stone, H. L.	NAS 2-10408	4195
51	U OKLA-HLTH SCI CTR	Sandler, H.	ARC	Stone, H. L.	NCA 2-580101	4196
51	UNIV OF PACIFIC	Holton, E. M.	ARC	Roberts, W. E.	NCC 2-224	1966
51	UNIV OF PACIFIC	Halstead, T. W.	HQ-EB	Roberts, W. E.	NAGW 356	1959
51	UNIV OF PENNSYLVANIA	Peck, E. E.	JSC	Brown, A. H.	NAS 9-15531	4354
51	UNIV OF PENNSYLVANIA	Halstead, T. W.	HQ-EB	Brown, A. H.	NGR 39-010-149	4358
51	UNIV OF PITTSBURGH	Daunton, N. G.	ARC	Tomko, D. L.	NAG 2-155	4360

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51	UNIV OF PITTSBURGH	Daunton, N. G.	ARC	Tomko, D. L.	NCA 2-592901	4369
51	UNIV SAN FRANCISCO	Kraft, L. M.	ARC	Benton, E. V.	NCA 2-670101	1970
51	UNIV SAN FRANCISCO	Kraft, L. M.	ARC	Benton, E. V.	NCC 2-47	1971
51	UNIV SAN FRANCISCO	Klein, H. P.	ARC	Brown, R. J.	NCC 2-85	1972
51	UNIV OF SANTA CLARA	Mandel, A. D.	ARC	Caren, L. D.	NCA 2-685002	1977
51	UNIV OF SANTA CLARA	Grindeland, R. E.	ARC	Fast, T.	NCA 2-685003	1978
51	UNIV OF SANTA CLARA	Hochstein, L. I.	ARC	Tomlinson, G. A.	NCA 2-685004	1979
51	UNIV OF SANTA CLARA	Grindeland, R. E.	ARC	East, T. N.	NCC 2-180	1996
51	UNIV OF SANTA CLARA	Devincenzi, D. L.	HQ-EB	Nealson, K. H.	NAGW 277	1976
51	UNIV OF SOUTHERN CAL	Geib, D. S.	HQ-EB	Strehler, B. L.	NSG 7367	2022
51	U TENNESSEE-MEMPHIS	Ferandin, J. A.	ARC	Lange, R. D.	NAS 2-11586	4463
51	UNIV TEXAS-AUSTIN	Halstead, T. W.	HQ-EB	Roux, S. J.	NASW 3663	4671
51	UNIV TEXAS-AUSTIN	Halstead, T. W.	HQ-EB	Roux, S. J.	NSG 7480	4682
51	U TEX MED BRANCH-GAL	Daunton, N. G.	ARC	Perachio, A. A.	NAG 2-26	4720
51	U TEX MED BRANCH-GAL	Daunton, N. G.	ARC	Correia, M. J.	NAG 2-186	4722
51	U TEX MED BRANCH-GAL	Ferandin, J.	ARC	Correia, M. J.	NAS 2-10502	4723
51	U TEX MED BRANCH-GAL	Owens, F. C.	HQ-LB	Correia, M. J.	NGT 44-088-800	4726
51	U TEX HLTH SC CTR-DA	Halstead, T. W.	HQ-EB	Templeton, G. H.	NAGW 140	4727
51	U TEX HLTH SC CTR-HU	Ellis, S.	ARC	Booth, F. W.	NAG 2-239	4730
51	U TEX HLTH SC CTR-HU	Waligora, J.	JSC	Hills, B. A.	NAG 9-23	4731
51	U TEX HLTH SC CTR-HU	Smith, M.	JSC	Booth, F.	NAS 9-15388	4733
51	U TEX HLTH SC CTR-HU	Cintron-trevino, N.	JSC	Booth, F. W.	NAS 9-16478	4734
51	U TEX HLTH SC CTR-HU	Halstead, T. W.	HQ-EB	Duke, P. J.	NAGW 438	4732
51	UNIV OF UTAH	Young, D. R.	ARC	Jee, W. S.	NAG 2-108	4743
51	UNIV OF VIRGINIA	Holton, E. M.	ARC	Pitts, G. C.	NSG 2225	4924
51	UNIV OF VIRGINIA	Devincenzi, D. L.	HQ-EB	Kretsinger, R. H.	NAGW 352	4912
51	UNIV WISC-MADISON	Young, D. R.	ARC	Deluca, H. F.	NAG 2-167	5107
51	UNIV WISC-MADISON	Zill, L. P.	ARC	Tibbitts, T. W.	NCC 2-136	5153
51	UNIV OF WYOMING	MacElroy, R. D.	ARC	Middaugh, C.	NCA 2-880201	5182
51	UTAH STATE UNIV	MacElroy, R. D.	ARC	Salisbury, F. B.	NCC 2-139	4774
51	UTAH STATE UNIV	Halstead, T. W.	HQ-EB	Salisbury, F. B.	NSG 7567	4777
51	VANDERBILT UNIVERSTY	Halstead, T. W.	HQ-EB	Dettbarn, W. D.	NAGW 469	4466
51	WAKE FOREST UNIV	Ferandin, J.	ARC	Hutchins, P. M.	NAS 2-10523	3923
51	WAKE FOREST UNIV	Halstead, T. W.	HQ-EB	Jaffe, M. J.	NAGW 96	3922
51	WASHINGTON UNIVERSTY	Halstead, T. W.	HQ-EB	Simmons, D. J.	NAGW 301	3440
51	WASHINGTON UNIVERSTY	Halstead, T. W.	HQ-EB	Pickard, B. G.	NAGW 420	3442
51	WRIGHT STATE UNIV	Daunton, N. G.	ARC	Crampton, G. H.	NCA 2-875002	4181
51	WRIGHT STATE UNIV	Daunton, N. G.	ARC	Crampton, G. H.	NCC 2-229	4183
51	YALE UNIVERSITY	Halstead, T. W.	HQ-EB	Galston, A. W.	NSG 7290	2163
54	COLORADO STATE UNIV	Nachtwey, D. S.	JSC	Lett, J. T.	NAG 9-10	2037
54	COLORADO STATE UNIV	Carter, C. H.	HQ-LB	Smith, J. A.	NGT 06-002-800	2043
54	OREGON GRADUATE CTR	Rambler, G.	HQ-EB	Rasmuski, R. A.	NAGW 457	4207
54	SAN JOSE STATE UNIV	Klein, H. P.	ARC	Weaver, E. C.	NCA 2-675003	1384
54	SAN JOSE STATE UNIV	Klein, H. P.	ARC	Neptune, J. A.	NCC 2-14	1400
54	STATE UNIV NY-ALBANY	Sauer, R.	JSC	Janauer, G. E.	NAS 9-16604	3795
54	STATE U NY-STONY BRK	Devincenzi, D. L.	HQ-EB	Slobodkin, L. B.	NAGW 144	3827
54	STATE U NY-STONY BRK	Owens, F. C.	HQ-LB	Schubel, J.	NGT 33-015-802	3846
54	TEXAS A&M UNIVERSITY	Zill, L. P.	ARC	Fong, F.	NCC 2-102	4591
54	TUSKEGEE INSTITUTE	Philpott, D. E.	ARC	Sapp, W. J.	NCC 2-12	1020
54	UNIV CALIF-BERKELEY	MacElroy, R. D.	ARC	Packer, L.	NCA 2-50202	1662
54	UNIV CALIF-S BARBARA	MacElroy, R. D.	ARC	Botkin, D.	NCA 2-680101	1933
54	UNIV CALIF-S BARBARA	Hogg, H.	HQ-EL	Botkin, D. B.	NAGW 231	1925
54	UNIV OF MIAMI	Fraser, R. S.	GSFC	Prospero, J. M.	NAS 5-26768	2315
54	UNIV OF SANTA CLARA	Hochstein, L. I.	ARC	Tomlinson, G. A.	NCA 2-685203	1983
54	UNIV OF SO FLORIDA	Billingham, J.	ARC	Briggs, J. C.	NAG 2-74	2325
54	UTAH STATE UNIV	Nachtwey, D. S.	JSC	Caldwell, M. M.	NAS 9-14871	4773
55	ALABAMA A&M UNIV	Stoner, E. R.	NSTL	Coleman, T. L.	NAG13-2	1002
55	COLORADO STATE UNIV	Kimes, D. S.	GSFC	Smith, J. A.	NAG 5-276	2034
55	GEORGE WASHINGTON U	Choudhury, B.	GSFC	Lang, R. H.	NAG 5-265	2194
55	HUNTER COLLEGE	Kimes, D. S.	GSFC	Strahler, A. H.	NAG 5-273	3723

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55	MASS INST OF TECH	Chang, A.	GSFC	Kong, J. A.	NAG 5-270	3108
55	MICHIGAN STATE UNIV	Nelson, R.	GSFC	Bartholic, J.	NAS 5-27618	3265
55	NO CAROLINA STATE U	MacElroy, R.	ARC	Raper, C. D.	NCC 2-101	3912
55	PENN STATE U-UNIV PK	Labovitz, M. L.	GSFC	Turner, B. J.	NAS 5-26323	4313
55	PURDUE UNIVERSITY	MacElroy, R. D.	ARC	Mitchell, C. A.	NCC 2-100	2608
55	PURDUE UNIVERSITY	Deering, D. W.	GSFC	Vanderbilt, V. C.	NAG 5-269	2596
55	STATE UNIV NY-ALBANY	Whitehead, V. S.	JSC	Duggin, M. J.	NAS 9-16514	3794
55	UNIV CALIF-DAVIS	Zill, L. P.	ARC	Huffaker, R. C.	NCC 2-99	1712
55	UNIV OF KANSAS	Choudhury, B.	GSFC	Fung, A. K.	NAG 5-268	2709
55	UNIV OF KANSAS	Brakke, T. W.	GSFC	Moore, R. K.	NAG 5-271	2710
55	UNIV OF KANSAS	Schmugge, T.	GSFC	Ulaby, F. T.	NAG 5-272	2711
55	UNIV MD-EASTRN SHORE	Pohly, J. G.	HQ-LC	Joshi, J. M.	NSG 7470	2983
55	UNIV NEBRASKA-LINCLN	Kimes, D. S.	GSFC	Norman, J. M.	NAG 5-277	3465
55	UNIV NEBRASKA-LINCLN	Owens, F. C.	HQ-LB	Blad, B. L.	NGT 28-004-801	3471
55	UNIV SO CAROLINA-COL	Toll, D. L.	GSFC	Jensen, J. R.	NAS 5-27304	4414
56	BAYLOR COL OF MED	Homick, J. L.	JSC	Banks, P. M.	NAS 9-14546	4478
56	BAYLOR COL OF MED	Leach, C. S.	JSC	Alfrey, C.	NAS 9-14662	4479
56	BAYLOR COL OF MED	Leach, C. S.	JSC	Dunn, C. D.	NAS 9-16180	4482
56	BAYLOR COL OF MED	Pierson, D. L.	JSC	Knight, V.	NAS 9-16280	4483
56	BAYLOR COL OF MED	Smith, M.	JSC	Leblanc, A.	NAS 9-16442	4484
56	BAYLOR COL OF MED	Taylor, G. R.	JSC	Rich, R. R.	NAS 9-16754	4485
56	BAYLOR COL OF MED	Smith, M. C.	JSC	Leblanc, A.	NAS 9-16818	4486
56	CASE WESTERN RESERVE	Kerslake, W. R.	LERC	Hottel, T.	NAG 3-115	3942
56	CASE WESTERN RESERVE	Weigand, A. J.	LERC	Gibbons, D. F.	NAS 3-22443	3998
56	COLUMBIA UNIVERSITY	Young, D. R.	ARC	Pawluk, R. J.	NCA 2-172102	3651
56	COLUMBIA UNIVERSITY	Wintucky, E. G.	LERC	Pawluk, R. J.	NAG 3-15	3635
56	CORNELL UNIV-MED CTR	Lauber, J. K.	ARC	Monk, T. H.	NCC 2-253	3719
56	HARVARD UNIVERSITY	Leach, C. S.	JSC	Hollenberg, N. K.	NAG 9-17	3014
56	HARVARD UNIVERSITY	Leach, C. S.	JSC	Moore-edde, M. C.	NSG 9054	3044
56	HOWARD UNIVERSITY	Alterescu, S.	GSFC	Chang, P.	NAS 5-23799	2235
56	INDIANA U-BLOOMINGTN	Greenleaf, J. E.	ARC	Elizondo, R.	NCA 2-335001	2561
56	JOHNS HOPKINS UNIV	Friedman, D. S.	GSFC	Long, D.	NAS 5-23732	2825
56	LINCOLN UNIV-PA	Alterescu, S.	GSFC	Frankowsky, J. W.	NAS 5-23800	4283
56	LA STATE U-SHREVEPT	Homick, J. L.	JSC	Wood, C. D.	NAS 9-16477	2783
56	MASS INST OF TECH	Mehler, W. R.	ARC	Graybiel, A. M.	NAG 2-124	3066
56	MASS INST OF TECH	Winget, C. M.	ARC	Wurtman, R. J.	NAG 2-210	3071
56	MASS INST OF TECH	Winget, C. M.	ARC	Deloatch, E. M.	NGR 22-009-627	3177
56	MASS INST OF TECH	Homick, J. L.	JSC	Oman, C. M.	NCC 9-1	3167
56	MASS INST OF TECH	Craemer, D. B.	HQ-EB	Young, L. R.	NASW 3651	3158
56	MED COL OF WISC	Montemerlo, M. D.	HQ-RT	Pendergrast, G.	NASW 3797	3160
56	MED COL OF WISC	Ellis, S.	ARC	Riley, D. A.	NCA 2-432201	5101
56	MEHARRY MEDICAL COL	Ellis, S.	ARC	Riley, D. A.	NCC 2-266	5102
56	MOREHOUSE COLLEGE	Alterescu, S.	GSFC	Braun, G.	NAS 5-23801	4423
56	PENN STATE U-UNIV PK	Alterescu, S.	GSFC	Barreras, R. J.	NAS 5-23571	2392
56	STANFORD UNIVERSITY	Morrison, D. R.	JSC	Hymmer, W. C.	NAS 9-15566	4323
56	STANFORD UNIVERSITY	Young, D. R.	ARC	Steele, C. R.	NAG 2-130	1458
56	STANFORD UNIVERSITY	Holton, E. M.	ARC	Feldman, D.	NCA 2-745107	1519
56	STANFORD UNIVERSITY	Goldwater, D.	ARC	Debusk, R. F.	NCA 2-745108	1520
56	STANFORD UNIVERSITY	Goldwater, D.	ARC	Popp, R.	NCC 2-1	1542
56	STANFORD UNIVERSITY	Sandler, H.	ARC	Harrison, D. C.	NCC 2-51	1550
56	STANFORD UNIVERSITY	Young, D. R.	ARC	Steele, C.	NCC 2-145	1564
56	STANFORD UNIVERSITY	Sandler, H.	ARC	Harrison, D. C.	NCC 2-232	1575
56	STANFORD UNIVERSITY	Keil, L. C.	ARC	Luetscher, J. A.	NGR 05-020-456	1586
56	STANFORD UNIVERSITY	Sandler, H.	ARC	Harrison, D. C.	NGR 05-020-634	1588
56	TEMPLE UNIVERSITY	Nachtwey, D. S.	JSC	Urback, F.	NAS 9-14979	4350
56	TEXAS A&M UNIVERSITY	Barnes, C. M.	JSC	Hightower, D.	NAS 9-16375	4574
56	TEXAS TECH UNIV	Young, D. R.	ARC	Kenny, A. D.	NSG 2137	4602
56	TUFTS UNIVERSITY	Trevino, N. C.	JSC	Lanyon, L.	NAG 9-25	3214
56	TULANE UNIVERSITY	Mehler, W. R.	ARC	Brizzee, K. R.	NAG 2-101	2793
56	UNIV TEX-BIOMED GRAD	Holt, S. S.	HQ-MF	Houtchens, B. A.	NASW 3744	4685

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## APPENDIX - CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
56	UNIV OF ARIZONA	Mandel, A. D.	ARC	Meinke, W. J.	NSG 2381	1217
56	UNIV OF ARIZONA	Taylor, G. R.	JSC	Criswell, B. S.	NAS 9-16268	1191
56	UNIV CALIF-BERKELEY	Golub, M. A.	ARC	Timiras, P. S.	NCC 2-187	1674
56	UNIV CALIF-IRVINE	Mandel, A. D.	ARC	Tilles, J. G.	NGR 05-041-012	1733
56	UNIV CALIF-SAN FRAN	Mehler, W. R.	ARC	Basbaum, A. I.	NCA 2-665301	1905
56	UNIV CALIF-SAN FRAN	Sandler, H.	ARC	Glantz, S. A.	NCA 2-665905	1908
56	UNIV CALIF-SAN FRAN	Philpott, D. E.	ARC	Arnaud, C. D.	NCA 2-665906	1909
56	UNIV CALIF-SAN FRAN	Philpott, D. E.	ARC	Strewler, G. J.	NCC 2-162	1911
56	UNIV CALIF-SAN FRAN	Holton, E. M.	ARC	Cann, C. E.	NCC 2-178	1912
56	UNIV CALIF-SAN FRAN	Altchuler, S. I.	JSC	Genant, H. K.	NAS 9-15887	1893
56	UNIV OF FLORIDA	Buchanan, P.	KSC	Grimes, R. R.	NAG10-7	2288
56	UNIV HOUSTON-HOUSTON	Degioanni, J.	JSC	Feldman, S.	NAS 9-16980	4618
56	UNIV HOUSTON-CL LAKE	Bungo, M.	JSC	Coleman, A. E.	NAS 9-16136	4630
56	UNIV OF KENTUCKY	Booher, C. R.	JSC	Bhagat, P. K.	NAS 9-15452	2759
56	UNIV MARYLAND-COL PK	Mandel, A. D.	ARC	Goldsby, R. A.	NSG 2378	2967
56	UNIV MD-EASTRN SHORE	Alterescu, S.	GSFC	Chapin, E. W.	NAS 5-26464	2980
56	UNIV OF MIAMI	Huntoon, C. L.	JSC	Epstein, M.	NAS 9-15473	2318
56	UNIV MICH-ANN ARBOR	Homick, J. L.	JSC	Anderson, D. J.	NAS 9-15244	3327
56	UNIV N CAR-CHPL HILL	Young, D.	ARC	Mgchanic, G.	NAG 2-181	3919
56	U OKLA-HLTH SCI CTR	Lucid, S.	JSC	Nordquist, R.	NAG 9-18	4194
56	UNIV SAN FRANCISCO	Young, D. R.	ARC	Brown, R. J.	NCC 2-135	1973
56	UNIV SAN FRANCISCO	Richmond, R. G.	JSC	Benton, E. V.	NAS 9-15152	1968
56	U TENNESSEE-MEMPHIS	Coleman, M. E.	JSC	Autian, J.	NAS 9-15670	4464
56	U TEX HLTH SC CTR-DA	Bungo, M.	JSC	Blomquist, C. G.	NSG 9026	4729
56	U TEX HLTH SC CTR-HU	Johnson, P.	JSC	Frost, W.	NAS 9-16688	4735
56	U TEX HLTH SC CTR-SA	Leach, C. S.	JSC	George, J. N.	NAG 9-5	4736
56	U TEX HLTH SC CTR-SA	Leach, C.	JSC	Lifschitz, M.	NAS 9-16366	4737
56	UNIV WISC-MADISON	Young, D. R.	ARC	Mazess, R. B.	NAG 2-166	5106
56	UNIV WISC-MADISON	Young, D. R.	ARC	Mazess, R. B.	NCC 2-217	5154
56	UNIV WISC-MADISON	Young, D. R.	ARC	Mazess, R. B.	NGR 50-002-051	5157
56	UNIV WISC-MADISON	Cintron-trevino, N.	JSC	Schnoes, H. K.	NAS 9-15580	5151
56	VIRGINIA COMNWLTH U	Hardin, J. C.	LARC	Patterson, J. L.	NAG 1-241	4927
56	WRIGHT STATE UNIV	Lesane, G.	HQ-EB	Mohler, S. R.	NGT 36-024-790	4184
56	YALE UNIVERSITY	Mandel, A. D.	ARC	Evans, A. S.	NSG 2185	2160
59	BAYLOR COL OF MED	Leach, C. S.	JSC	Suki, W. N.	NAS 9-15891	4480
59	BAYLOR COL OF MED	Thirolf, R. G.	JSC	Martin, R. R.	NAS 9-16040	4481
59	BRANDEIS UNIVERSITY	Homick, J. L.	JSC	Lackner, J. R.	NAS 9-15147	3006
59	DUKE UNIVERSITY	MacElroy, R. D.	ARC	Quinlan, A. V.	NCA 2-206301	3878
59	EMORY UNIVERSITY	Goldsboro, J. A.	ARC	McClure, H. M.	NAS 2-10627	2336
59	FLORIDA A&M UNIV	Winget, C. M.	ARC	Walker, C. A.	NSG 2029	2255
59	FLORIDA A&M UNIV	Winget, C. M.	ARC	Soliman, K. F.	NSG 2183	2256
59	GEORGE WASHINGTON U	Halstead, T. W.	HQ-EB	Waters, E.	NASW 3165	2200
59	GEORGIA INST OF TECH	Quattrone, P. D.	ARC	Winnick, J.	NAG 2-233	2349
59	HOWARD UNIVERSITY	Sandler, H.	ARC	Hawthorne, E. W.	NAG 2-250	2223
59	JOHNS HOPKINS UNIV	White, T.	JSC	Walker, W. G.	NAS 9-16030	2832
59	JOHNS HOPKINS UNIV	French, B.	JSC	Proctor, D. F.	NAS 9-16036	2833
59	LA STATE U-SHREVEPT	Homick, J. L.	JSC	Wood, C. D.	NAS 9-16801	2784
59	MARQUETTE UNIVERSITY	Smith, M. C., Jr.	JSC	Fitts, R. H.	NAS 9-15711	5099
59	MASS INST OF TECH	Quattrone, P. D.	ARC	Reid, R. C.	NAG 2-90	3062
59	MASS INST OF TECH	MacElroy, R. D.	ARC	Karel, M.	NCC 2-231	3164
59	MASS INST OF TECH	Wydeven, T.	ARC	Modell, M.	NSG 2403	3192
59	MASS INST OF TECH	Peck, E. E.	JSC	Young, L. R.	NAS 9-15343	3155
59	MASS INST OF TECH	Evans, J. S.	JSC	Young, L. R.	NAS 9-16523	3156
59	MIAMI UNIVERSITY	Homick, J. L.	JSC	Parker, D. E.	NAS 9-14538	4055
59	MIAMI UNIVERSITY	Evans, J. S.	JSC	Parker, D. E.	NAS 9-16049	4056
59	MIAMI UNIVERSITY	Evans, J. S.	JSC	Parker, D. E.	NAS 9-16051	4057
59	OREGON HLTH SCNCS U	Fogle, V.	MSFC	Brooks, D. E.	NAS 8-35333	4211
59	RUSH UNIVERSITY	Evans, J. S.	JSC	Gottlieb, G. L.	NAS 9-16035	2465
59	SAN FRAN STATE UNIV	Desmarais, D. J.	ARC	Rau, G. H.	NCA 2-660302	1374
59	SAN FRAN STATE UNIV	Billingham, J.	ARC	Seeger, C. L.	NCC 2-32	1376

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## APPENDIX - CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
59	SAN FRAN STATE UNIV	Billingsnam, J.	ARC	Seeger, C. L.	NCC 2-214	1377
59	SAN JOSE STATE UNIV	Deal, P. H.	ARC	Holley, D. C.	NCA 2-675103	1388
59	SAN JOSE STATE UNIV	Jahnke, L. L.	ARC	Holley, D. C.	NCA 2-675303	1394
59	SAN JOSE STATE UNIV	Hart, S. G.	ARC	Plant, W. T.	NCC 2-34	1402
59	SAN JOSE STATE UNIV	Winget, C. M.	ARC	Holley, D. C.	NCC 2-116	1413
59	STANFORD UNIVERSITY	Curry, R. E.	ARC	Thompson, D. A.	NAG 2-168	1460
59	STANFORD UNIVERSITY	Sandler, H.	ARC	Harrison, D. C.	NCC 2-126	1562
59	STANFORD UNIVERSITY	Devincenzi, D. L.	HQ-EB	Bonner, W. A.	NGL 05-020-582	1585
59	STATE UNIV NY-ALBANY	Horrigan, D. J.	JSC	Farhi, L. E.	NAS 9-15802	3792
59	STATE UNIV NY-BUFFAL	Peck, E. E.	JSC	Farhi, L.	NAS 9-16042	3814
59	ST U NY-DNST MED CTR	Ellis, S.	ARC	Etlinger, J. D.	NAG 2-162	3852
59	UNIV OF AKRON	French, B. O.	JSC	Herron, D. E.	NAS 9-16043	4120
59	UNIV ALA-HUNTSVILLE	Fogle, V.	MSFC	Harris, J. M.	NAS 8-35334	1055
59	UNIV ALA-HUNTSVILLE	Fogle, V.	MSFC	Harris, J. M.	NAS 8-35362	1058
59	UNIV OF ARIZONA	McCollum, G. W.	JSC	Criswell, B. S.	NAS 9-16838	1192
59	UNIV OF ARIZONA	Snyder, R. S.	MSFC	Bartels, P. H.	NAS 8-31948	1186
59	UNIV OF ARIZONA	Moore, W. W., Jr.	MSFC	Bier, M.	NAS 8-32950	1187
59	UNIV CALIF-L ANGELES	Sandler, H.	ARC	Bricker, N. S.	NCC 2-104	1782
59	UNIV CALIF-SAN DIEGO	McAllum, W. E.	JSC	West, J. B.	NAS 9-16037	1863
59	UNIV CALIF-SAN DIEGO	Leach, C. S.	JSC	Ziegler, M. G.	NAS 9-16312	1864
59	UNIV CALIF-SAN FRAN	Souza, K.	ARC	Cann, C.	NAS 2-10927	1892
59	UNIV CALIF-SAN FRAN	Keil, L. C.	ARC	Ramsay, D. J.	NCC 2-194	1914
59	UNIV CALIF-SAN FRAN	White, T. T.	JSC	Searle, D. L.	NAS 9-16038	1894
59	UNIV CALIF-SAN FRAN	Newkirk, K. E.	JSC	Arnaud, C. D.	NAS 9-16227	1895
59	UNIV CALIF-S BARBARA	Owens, F. C.	HQ-LB	Estes, J. E.	NGT 05-010-802	1941
59	UNIV OF DENVER	Booher, C. R.	JSC	Sturm, R. E.	NAS 9-15991	2130
59	UNIV OF HAWAII-MANOA	Peck, E. E.	JSC	D'ariso, J. F.	NAS 9-16048	2418
59	UNIV HOUSTON-HOUSTON	Tremor, J. W.	ARC	Cowles, J. R.	NAS 2-11165	4611
59	UNIV HOUSTON-HOUSTON	Sauer, R. L.	JSC	Witte, L. C.	NAS 9-11676	4614
59	UNIV HOUSTON-HOUSTON	Owens, F. C.	HQ-LB	Bell, L.	NGT 44-005-802	4623
59	UNIV ILLINOIS-URBANA	Peck, E. E.	JSC	Voss, E. W.	NAS 9-15328	2538
59	UNIV OF KENTUCKY	Peck, E. E.	JSC	Bhagat, P. K.	NAS 9-16034	2760
59	UNIV OF KENTUCKY	Peck, E. E.	JSC	Bhattacharga, A.	NAS 9-16045	2761
59	UNIV OF MIAMI	Ellis, S.	ARC	Kerrick, W. G.	NAG 2-150	2309
59	UNIV MICH-ANN ARBOR	Tremor, J. W.	ARC	Nace, G. W.	NAS 2-10945	3305
59	U OKLA-HLTH SCI CTR	Sandler, H.	ARC	Stone, H. L.	NCC 2-24	4197
59	UNIV OF PACIFIC	Holton, E. M.	ARC	Roberts, W. E.	NCA 2-588002	1960
59	UNIV OF PENNSYLVANIA	McCollum, G.	JSC	Stein, T. D.	NAS 9-16031	4355
59	UNIV OF ROCHESTER	Moore, W. W., Jr.	MSFC	Cokelet, G. R.	NAS 8-34892	3868
59	U TEX MED BRANCH-GAL	Gomersall, E. W.	ARC	Fabricant, J. D.	NAG 2-183	4721
59	U TEX HLTH SC CTR-DA	Lintott, J.	JSC	Blomquist, C. G.	NAS 9-16044	4728
59	UNIV OF UTAH	Owens, F. C.	HQ-LB	Kyriakides, S.	NGT 45-003-801	4756
59	VIRGINIA COMNWLTH U	Young, W. J.	JSC	Ekkberg, D. L.	NAS 9-16046	4928
59	WASHINGTON UNIVERSTY	Souza, K. A.	ARC	Simmons, D. J.	NAS 2-10636	3444
61	MASS INST OF TECH	Patton, R. M.	ARC	Wurtman, R. J.	NAG 2-132	3068
61	SAN JOSE STATE UNIV	Daunton, N. G.	ARC	Fox, R. A.	NCA 2-675009	1386
61	UNIV CALIF-SAN FRAN	Cowings, P. S.	ARC	Kamiya, J.	NCC 2-115	1910
61	UNIV MICH-ANN ARBOR	Haines, R. F.	ARC	Weintraub, D. J.	NCA 2-440301	3329
61	UNIV OF SANTA CLARA	Connors, M.	ARC	Akins, F. R.	NCC 2-49	1989
61	UNIV OF UTAH	Carter, C. H.	HQ-LB	Nielson, H. C.	NGT 45-003-800	4755
61	WRIGHT STATE UNIV	Daunton, N. G.	ARC	Crampton, G. H.	NCC 2-204	4182
62	JOHNS HOPKINS UNIV	Patton, R. M.	ARC	Brady, J. V.	NAG 2-139	2809
62	JOHNS HOPKINS UNIV	Patton, R. M.	ARC	Brady, J. V.	NGR 21-001-111	2838
62	OHIO STATE UNIV	Foushee, H. C.	ARC	Jensen, R.	NCC 2-206	4090
62	OLD DOMINION UNIV	Carter, C. H.	HQ-LB	Coates, G. D.	NGT 47-003-801	4871
62	PURDUE UNIVERSITY	Patton, M.	ARC	Castore, C. H.	NCA 2-605001	2606
62	UNIV TEXAS-AUSTIN	Patton, R. M.	ARC	Helmreich, R. L.	NAG 2-137	4638
62	WAYNE STATE UNIV	Murphy, M. R.	ARC	Frankel, R. M.	NCC 2-230	3348
69	ARIZONA STATE UNIV	Voorhees, J. W.	ARC	Damos, D. L.	NAG 2-217	1084
69	ARIZONA STATE UNIV	Hart, S. G.	ARC	Damos, D. L.	NCC 2-202	1107

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
69	ARIZONA STATE UNIV	Hartzell, E. J.	ARC	Damos, D.	NCC 2-263	1108
69	BOSTON UNIVERSITY	Powell, C. A.	LARC	Hellman, R. P.	NSG 1644	3004
69	CAL STATE U-HAYWARD	Hartzell, E. J.	ARC	Klapp, S. T.	NCC 2-223	1336
69	COLLEGE OF WM & MARY	Pope, A. T.	LARC	Null, C. H.	NCC 1-78	4797
69	GEORGIA INST OF TECH	Palmer, E. A.	ARC	Rouse, W. B.	NAG 2-123	2346
69	MASS INST OF TECH	Remington, R. W.	ARC	Kenyon, R. V.	NAG 2-103	3063
69	MASS INST OF TECH	Hart, S. G.	ARC	Sheridan, T.	NAG 2-227	3073
69	OHIO STATE UNIV	Lauber, J. K.	ARC	Rockwell, T. H.	NAG 2-112	4064
69	OHIO STATE UNIV	Hartzell, E. J.	ARC	Miller, R. A.	NAG 2-195	4067
69	OHIO STATE UNIV	Dunn, R. S.	ARC	Jagacinski, R. J.	NSG 2179	4097
69	OLD DOMINION UNIV	Carter, C. H.	HQ-LB	Coates, G. D.	NGT 47-003-800	4870
69	PURDUE UNIVERSITY	Hartzell, E. J.	ARC	Schmidt, D. K.	NCC 2-245	2613
69	SAN JOSE STATE UNIV	Curry, R. E.	ARC	Regan, J. E.	NAG 2-84	1379
69	SAN JOSE STATE UNIV	Tanner, T. A.	ARC	Plant, W. T.	NCC 2-35	1403
69	SAN JOSE STATE UNIV	Hartzell, E. J.	ARC	Plant, W. T.	NCC 2-37	1404
69	STANFORD UNIVERSITY	Ahumada, A. J., Jr.	ARC	Karamcheti, K.	NCC 2-44	1547
69	STANFORD UNIVERSITY	Ahumada, A. J.	ARC	Karamcheti, K.	NCC 2-177	1567
69	STANFORD UNIVERSITY	Tanner, T. A.	ARC	Calfee, R. C.	NCC 2-215	1571
69	TUFTS UNIVERSITY	Palmer, E. A.	ARC	Chechile, R. A.	NAG 2-51	3213
69	UNIV CALIF-IRVINE	Ahumada, A. J., Jr.	ARC	Yellott, J.	NCA 2-345301	1732
69	UNIV CALIF-L ANGELES	Hart, S. G.	ARC	Lyman, D. J.	NAG 2-216	1743
69	UNIV CALIF-SAN FRAN	Cowings, P. S.	ARC	Naifeh, K.	NCA 2-665007	1898
69	UNIV OF FLORIDA	Patton, R. M.	ARC	Lang, P. J.	NAG 2-234	2283
69	UNIV ILLINOIS-URBANA	Hart, S. G.	ARC	Wickens, C. D.	NAG 2-169	2519
69	UNIV OF MIAMI	Curry, R. E.	ARC	Wiener, E. L.	NCC 2-152	2322
69	UNIV OF NEVADA-RENO	Hartzell, E. J.	ARC	Harrington, T. L.	NAG 2-196	3477
69	UNIV OF NEVADA-RENO	Hartzell, E. J.	ARC	Harrington, T.	NCC 2-249	3480
69	UNIV TEXAS-AUSTIN	Patton, R. M.	ARC	Helmreich, R. L.	NSG 2065	4678
69	U TEX MED BRANCH-GAL	Reschke, M. F.	JSC	Correia, M. J.	NAS 9-14641	4725
69	UNIV OF TORONTO	Hart, S. G.	ARC	Moray, N.	NAGW 429	5188
73	MASS INST OF TECH	Dietrich, J. W.	JSC	Uhlmann, D. R.	NAG 9-12	3113
73	RICE UNIVERSITY	Grotberg, M.	JSC	Van Helden, A.	NAS 9-16773	4512
73	TEXAS A&M UNIVERSITY	Rowsome, F.	HQ-NS	Nicks, O. W.	NASW 3557	4586
79	CAL STATE U-NRTHRDGE	Tanner, T. A.	ARC	Bluth, B. J.	NAG 2-255	1343
79	GEORGETOWN UNIV	Nixon, W. D.	HQ-LC	Cheston, T. S.	NASW 3397	2218
79	UNIV CALIF-BERKELEY	Tuyahov, A. J.	HQ-ET	Colwell, R. N.	NSG 7522	1699
79	UNIV MICH-ANN ARBOR	Marsik, S. J.	LERC	Roberts, A. F.	NAG 3-185	3282
79	WESTERN MICHIGAN U	Thorne, M. M.	HQ-LC	Lindbeck, J. R.	NASW 3544	3349
99	BOWIE STATE COLLEGE	Chapman, J. W., Sr.	GSFC	Kirksey, C. H.	NGT 21-027-012	2804
99	CAL STATE U-CHICO	Bondurant, L.	LERC	Lewis, M. R.	NAS 3-22172	1330
99	GEORGIA INST OF TECH	Lee, R. B.	LARC	Sayle, W. E.	NAS 1-16845	2362
99	GEORGIA INST OF TECH	Lee, R. B.	LARC	Freeston, D. W.	NAS 1-17141	2363
99	GEORGIA INST OF TECH	Lee, R. B.	LARC	Freeston, D. W.	NAS 1-17545	2365
99	HAMPTON INSTITUTE	Erickson, W. D.	LARC	Darden, G. C.	NAS 1-16455	4812
99	HARVARD UNIVERSITY	Clark, T.	GSFC	Lilley, A. E.	NAS 5-25677	3022
99	HOWARD UNIVERSITY	Owens, F. C.	HQ-LB	Fan, D. N.	NGT 09-011-060	2241
99	MORGAN STATE UNIV	Mundy, J. R.	GSFC	Proctor, N. K.	NGT 21-025-080	2850
99	OHIO STATE UNIV	Hart, S. G.	ARC	Jensen, R. S.	NAG 2-184	4066
99	OKLAHOMA STATE UNIV	Bilbrough, L.	HQ-LF	Wiggins, K.	NASW 3313	4189
99	OKLAHOMA STATE UNIV	Bilbrough, L.	HQ-LF	Unavailable	NASW 3716	4190
99	OLD DOMINION UNIV	Huffman, J. P.	LARC	Stohrer, F. F.	NAS 1-16537	4852
99	PENN STATE U-UNIV PK	Nelson, R.	GSFC	Turner, B. J.	NAS 5-26468	4315
99	PENN STATE U-UNIV PK	Labovitz, M. L.	GSFC	Turner, B.	NAS 5-26652	4317
99	PURDUE UNIVERSITY	Hart, S. G.	ARC	Kantowitz, B. H.	NCC 2-235	2611
99	PURDUE UNIVERSITY	Gordon, F.	GSFC	Landgrebe, D. A.	NSG 5414	2621
99	SAN FRAN STATE UNIV	Tomberlin, K. A.	ARC	Eisenberg, L.	NCA 2-660201	1372
99	SAN FRAN STATE UNIV	Tomberlin, K. A.	ARC	Eisenberg, L.	NCA 2-660301	1373
99	SOUTHEASTN OKLA ST U	Bivins, R. G.	HQ-LG	Harmon, J.	NASW 3659	4193
99	TUFTS UNIVERSITY	Hart, S. G.	ARC	Kreifeldt, J. G.	NCC 2-93	3216
99	UNIV OF AKRON	Glazer, J. H.	ARC	Desaussure, H.	NCA 2-5101	4121

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
99	UNIV OF ARIZONA	Gordon, F., Jr.	GSFC	Slater, P.	NAS 5-27382	1184
99	UNIV CALIF-BERKELEY	Billingham, J.	ARC	Bowyer, C. S.	NCC 2-36	1666
99	UNIV CALIF-BERKELEY	Ellis, S. R.	ARC	Stark, L.	NCC 2-86	1669
99	UNIV CALIF-HASTNGS C	Glazer, J. H.	ARC	Henke, D. F.	NCA 2-280001	1721
99	UNIV CALIF-L ANGELES	Dietrich, J. W.	JSC	Depaolo, D. J.	NAG 9-15	1754
99	UNIV CALIF-S BARBARA	Sinnott, D. B.	ARC	Estes, J. E.	NAG 2-121	1919
99	UNIV CALIF-S BARBARA	Owens, F. C.	HQ-LB	Ozier, J. D.	NGT 05-010-803	1942
99	UNIV OF CHICAGO	Rosendhal, J. D.	HQ-E	Meyer, P.	NGL 14-001-258	2502
99	UNIV OF CHILE	Force, C. A.	GSFC	Diaz, E.	NAS 5-1925	5191
99	UNIV OF DENVER	Ault, L. A.	HQ-LG	Chapman, R.	NASW 3466	2131
99	UNIV HOUSTON-HOUSTON	Smith, M. C.	JSC	Bell, L.	NAS 9-15944	4616
99	UNIV HOUSTON-HOUSTON	Smith, M. C.	JSC	Rappole, C.	NAS 9-16593	4617
99	UNIV HOUSTON-CL LAKE	Garman, J. R.	JSC	McKay, C. W.	NAS 9-17010	4633
99	UNIV ILLINOIS-URBANA	Hart, S. G.	ARC	Gopher, D.	NCC 2-233	2541
99	UNIV OF KENTUCKY	Ault, L. A.	HQ-LG	Strong, F.	NASW 3367	2762
99	UNIV MARYLAND-COL PK	Truszkowski, W.	GSFC	Rieger, C. S.	NAS 5-25764	2907
99	UNIV MD-EASTRN SHORE	Foster, J. N.	GSFC	Smith, J. C.	NCC 6-3201	2982
99	UNIV OF MIAMI	Tobias, L.	ARC	Friedman, M. F.	NCA 2-438201	2321
99	UNIV OF NEW MEXICO	Bivins, R. G.	HQ-LG	Morain, S. A.	NASW 3408	3601
99	UNIV OF SANTA CLARA	Glazer, J. H.	ARC	Berg, R.	NCA 2-685202	1982
99	UNIV OF SANTA CLARA	Margozzi, A. P.	ARC	Greeley, R.	NCC 2-60	1990
99	UNIV OF SOUTHERN CAL	Gilbert, R. L.	HQ-ET	King, R. G.	NASW 3461	2015
99	UNIV OF SOUTHERN CAL	Bivins, R. G.	HQ-ET	Mixer, R.	NASW 3470	2016
99	UNIV TEXAS-DALLAS	Gaskins, M. A.	HQ-E	Hanson, W. B.	NGL 44-004-130	4711
99	VIRGINIA POLY INST	Hart, S. G.	ARC	Wierwille, W. W.	NAG 2-17	4977
99	VIRGINIA POLY INST	Hohl, F.	LARC	Unavailable	NAS 1-15080	4993
99	VIRGINIA POLY INST	Prior, E. J.	LARC	Unavailable	NAS 1-17100	4995
99	VIRGINIA POLY INST	Deloach, R.	LARC	Frair, L.	NSG 1598	5018
99	WORCESTER POLY INST	Harris, R. L., Sr.	LARC	Tole, J. R.	NCC 1-56	3249

